Review of selected performance indicators of the NSW CTP Scheme 2014

State Insurance Regulatory Authority

November 2015





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1. Executive summary

1.1 Introduction and purpose

EY has been requested by the State Insurance Regulatory Authority (SIRA) to review the performance of the NSW Compulsory Third Party (CTP) Scheme (the Scheme). EY is the independent Scheme actuary. We have performed the review by analysing key metrics agreed with the SIRA. Results of the review are documented in this report.

This is the third time that EY has conducted this review. The previous review is documented in a summary report "Selected indicators of the performance of the NSW CTP Scheme to 2013" dated 16 March 2014 and is referred to as the "previous report". Further details of the previous review may be available on request.

This review mostly uses data up to 30 June 2014 in calculating the key metrics. Most key metrics are shown starting from late 2000 when the current Scheme commenced its operations. Key drivers of some of these metrics are shown.

The Lifetime Care & Support (LTCS) scheme is excluded from the analysis since it is managed by the Insurance & Care NSW (iCare) instead of the SIRA.

The SIRA has adopted two key indicators to assess the performance of the Scheme:

- Affordability the premium charged for a CTP policy relative to average NSW weekly earnings. The lower the premium as a proportion of average earnings, the more affordable premiums are considered to be.
- Efficiency the proportion of premiums that is returned to injured persons as claim benefits rather than service delivery costs and insurer profit. The higher the proportion, the greater the efficiency of the Scheme.

In addition to the above two key performance indicators of the Scheme, the SIRA is also monitoring the fairness of the premiums paid by vehicle owners. That is, subject to the objective for premiums to be affordable, they reflect the underlying claims experience of the relevant cohort of policies. To achieve the objective of affordable premiums the SIRA limits the extent to which insurers can vary premiums by applying loadings and discounts. Applying constraints on insurer's ability to apply loadings and discounts to premiums introduces cross-subsidies between different cohorts of policies. The extent of cross-subsidies is a measure of the extent to which premiums are not equitable. Further details are set out in section 7.

As agreed with the SIRA, this report does not measure the affordability of premiums as this work is being undertaken by the SIRA. However, our report does review measures of Scheme performance that impact premium affordability (e.g. claim frequency trends).

Some of the results in this report also appear in the SIRA report titled "Motor Accidents Authority of NSW Annual Report 2013-2014." Results on Scheme profitability and efficiency may not fully reconcile due to different bases used. This is further explained in sections 5 and 6 of this report.

A considerable amount of the results presented in this report are based on regular work that has been performed by the Scheme actuary for a number of years. These results include an analysis of the Scheme experience as well as actuarial projections of claims experience.

1.2 Structure of this report

We have analysed the main items of Scheme experience that impact the efficiency and affordability of the Scheme. These items include:

- ► Insurer risk premium (i.e., claims cost) in section 4, including:
 - ► Claim numbers, claims frequency, propensity to claim and casualty numbers
 - Average claims size and superimposed inflation
 - Cost per policy which combines claim frequency and average claims size
 - Experience by type of payment, heads of damage and legal representation status
 - ► Additional analysis of ANFs, payment patterns, claim payment duration and the impact of changes in claims inflation and interest rates not discussed in the previous report.
- Insurer profitability in section 5. Profit loadings need to achieve a balance between an adequate return on capital for insurers to ensure a financially viable scheme and affordable premiums for vehicle owners. Insurer profitability depends on claims cost per policy.
- ▶ We have investigated efficiency of the Scheme in section 6 and in particular the impact of legal and investigation costs for claims of various sizes.
- In section 7 we have reviewed some aspects of the premium system including the increase in the number of reported claims by geographic region, relative claims cost by age of driver and age of vehicle and the average loadings on premiums by class of vehicles.

We have provided in this report high level commentary and insights into the movements in the above metrics over time.

1.3 Summary of results

The following presents major results of our review. Conclusions regarding data, methods, assumptions and results in this executive summary should be made only after studying this report in its entirety, as conclusions based solely on a section or selected sections may be incorrect or misleading.

Section 4 discusses the claims experience of the Scheme. The main observations are:

- While casualty numbers have continued to fall in recent years (from around 25,000 in 2008 to 22,000 in 2014), the number of full claims has increased from around 9,000 to around 11,000 (over the same period). This is driven by an increase in the propensity to claim which has increased from 30% to close to 50% over the last six years
- Minor severity injuries with legal representation, which increased by 2,500 claims from 2008 to 2014, are the main contributor to the increase in claim numbers
- Average claim sizes by the various claim types have been stable after allowing for the effects of wage inflation. However increases in the number of minor severity injury claims with legal representation have resulted in a disproportionate increase in average claims cost per policy for this category of claims
- Our analysis of superimposed inflation (SI) shows there has been a small reduction in the finalised claim sizes (a small negative SI of -2%) from 2008 to 2014. While there have been no material SI for claims of similar injury severities, we have observed a shift in the profile of claims settled from serious severity injury claims to minor severity injury with legal representation claims. This shift reduces the average claim size by around 2% p.a., that is, it explains the entirety of the small negative SI observed in the Scheme
- ► We examined the number of legally represented claims reported before and after October 2008 to assess the impact and effectiveness of MACA Amendment 2007 which extended the ANF threshold from \$500 to \$5,000. There was an immediate increased in the number of

legally represented claims converted from ANFs post MACA Amendment 2007; however, there was not an offsetting reduction in legally represented claims that were directly reported as full claims. The overall number of represented claims increased in the scheme post MACA Amendment 2007.

Section 5 discusses Scheme profitability which takes the difference between premiums and discounted claim costs and relevant expenses. Key findings are:

- ► Profit margins have been projected to be above the average filed profit margin of 8% across all accident years (ending 30 June) except 2009. The average profit margin for the five years from 2000 to 2004 is estimated to be 28%, the average for the next five years (2005 to 2009) is estimated to be 18% and the average for the most recent five years (2010 to 2014) is estimated to be 12%
- The main driver of the higher than target profit margin in the Scheme has been the last of SI since 2008. If the SI continues to be benign, then the actual profit margin eventuating from the most recent five accident years (2010 to 2014) may potentially be higher.

Section 6 discusses Scheme efficiency which is the proportion of premium paid to claimants. Key findings are:

- Scheme efficiency was less than 50% up to accident year 2007 and since then has been hovering between 50% and 60%. Efficiency for the accident year 2014 is projected to be above 60%. Projected average efficiency for the latest five accident years is 59%
- Smaller claims (claim size less than \$50,000) with legal representation have a higher proportion of legal and investigation costs on average (35% vs 10% for all claims). As a result policies with a higher mix of these claims will tend to have lower efficiency, all else equal.

The issue of cross-subsidies between various groups of vehicle owners are examined in section 7. The main findings are,

- The recent increase in claim numbers observed in the Scheme is concentrated in the Sydney Metropolitan rating region
- ► For Class 1 vehicles, the relative claims cost is lower for policies insuring newer vehicles (vehicles up to 5 years old) compared to policies insuring older vehicles. The relative cost for the newer vehicles is around 0.8; that is, 20% lower than the average cost for all Class 1 vehicles
- ► The relative claims cost is considerable higher for policies insuring young drivers (up to 30 years of age) for the main vehicle classes (Class 1, 3c and 10) compared to policies insuring drivers aged 30 years and above. Policies insuring drivers up to 21 years of age with Class 1 and 3c vehicles have a relative cost of around 2.20, that is, the average claims cost for these policies are more than double of their respective vehicle class averages
- ► An analysis of average bonus-malus loadings at a vehicle class level shows the average loading for motorcyclists has reduced over time while it has increased for Class 3c vehicles. Other minor classes have their average loading or average discount either stable to reverting to a more neutral level. We note Class 3e (Goods vehicles > 16T GVM) vehicles have consistently enjoyed an average discount of around 7% and Class 7 (Taxi-cabs) vehicles had a 10% discount in 2013 which has now reverted back to a neutral level.

1.4 Uncertainty

There is significant uncertainty associated with actuarial estimates shown in this report. Estimates of future claims experience (such as claims numbers and payments) are uncertain because they depend on outcomes of future events which cannot be forecast precisely. These outcomes include future

social, economic and legal environments. Therefore, actual claims experience may emerge at levels higher or lower than actuarial estimates.

Further comments on uncertainty are included throughout this report; however the most important ones are outlined in section 8.

1.5 Reliance and limitations

In undertaking this review, reliance has been placed upon the data provided to us mainly by the SIRA. We have also relied on supplementary information from Taylor Fry. The accuracy of SIRA data relies on the accuracy of insurer data have provided their data to the SIRA.

As agreed with the SIRA, this report does not consider affordability. Our assessment of affordability is documented in the previous report.

It is essential that any reader of this report understands its qualifications and limitations. These are described throughout the report; however the most important ones are outlined in section 9.

Glossary

Term	Definition
Accident Notification Forms (ANFs)	The form provides for the early payment of reasonable and necessary medical expenses and/or lost earnings up to a maximum of \$5,000. ANFs can be lodged by at-fault and not at-fault injured parties.
Accident year	Denotes the year in which the vehicle accident giving rise to the claim occurred. Accident years generally run from 1 July to 30 June.
Acquisition expenses	All expenses insurers incur to acquire and retain CTP business. These expenses include personnel costs and associated costs (e.g. rent, insurance premiums, etc.), IT costs, finance costs (e.g. accounting, audit, actuarial, etc.), stationery, marketing and advertising costs, commissions and other costs including overhead costs.
Affordability	Average premium (including levies but excluding GST) charged in the quarter divided by average weekly earnings in the quarter. This is consistent with the definition presented in the SIRA's annual report and that adopted by other schemes. The higher this ratio the less affordable the premium.
Agents' commission	Refers to payments made to agents/brokers by insurers for writing CTP insurance on behalf of the insurer. The maximum commission payable for CTP insurance is 5 per cent of the insurance premium.
Chain ladder	A standard actuarial method that uses the pattern derived from the historic experience of claims reporting.
Bulk-Billing	Under the Bulk Billing Agreement, CTP insurers pay an annual lump sum to the NSW Ministry of Health for public hospital and public road ambulance services.
Casualty	Any person killed or injured as a result of an accident attributable to the movement of a road vehicle on a road, as recorded by Roads and Maritime Services.
Claim frequency	Ultimate number of claims divided by the number of vehicles.
Claims handling expenses	Refers to expenses related to managing and administering CTP claims. These expenses include costs of claims staff managing claims, rehabilitation staff, managers and support staff.
Claim type	The claims in the NSW CTP scheme are split into full claims, ANFs and workers compensation recovery claims.
Contracted-out legal costs	Costs payable to the legal practitioner representing the claimant, by the claimant, under an agreed private arrangement i.e. those costs in excess of those specified in the SIRA Cost Regulation. These costs are not transparent in the insurer or Scheme data held by the SIRA.
Cost per policy	Total cost of claims divided by the number of insured motor vehicles in NSW.
Current value	Historical payments inflated to the current period based on a general price index.
Development year	This denotes the time elapsed since the year in which the accident occurred.
Green slips	The term 'Green Slip' dates back to the start of the NSW CTP scheme in 1989 where the CTP insurance invoice was a detachable green coloured slip.
Incurred But Not Reported (IBNR)	An actuarial term for the estimate of claims that will be received in the future in respect to accidents which have already occurred.
Incurred claims cost	Claim payments to date plus case estimates.

Term	Definition			
Inflated cost per policy	Sum of past claim payments, in original dollar values, and future claim payments, including future wage inflation and superimposed inflation, divided by the number of policies.			
Injury severity	The table below shows the injury severity level classifications. Specialised insurer staffs classify each claimant's injury severity based on the Abbreviated Injury Scale set by the Association for the Advancement of Automotive Medicine.			
	Injury severity level code Description			
	1	Minor		
	2	Moderate		
	3	Serious		
	4	Severe		
	5	Critical		
	6	Maximum		
	9	Unknown		
Life Time Care Support (LTCC) esheme	We use "serious severity" to severity, critical severity and Abbreviated Injury Scale. We minor severity and unknown	refer to claims for serious d maximum severity injurie e use "minor severity" to r severity injuries.	s severity, severe es under the efer to claims for	
Life Time Care Support (LTCS) scheme	This scheme provides treatment, rehabilitation and attendant care services to people severely injured in motor accidents in NSW, regardless of who was at fault in the accident.			
Medical Care and Injury Services (MCIS) levy	y Refers to a levy applied to the CTP insurance premium to fund the cover provided by the Lifetime Care and Support scheme. Part of the MCIS levy is also used to fund the SIRA and Bulk Billing arrangements for ambulance and hospital services.			
Net reinsurance cost	Refers to the net cost of reir reinsurance claim payments	nsurance after allowing for).	r recoveries (i.e.	
Payment Per Claim Finalised (PPCF)	A standard actuarial model t finalised claim will progress accident years.	hat assumes the average in a reasonably steady fas	payments per hion between	
Personal Injury Register (PIR)	A database maintained by the SIRA which collates and records CTP claims related data provided by insurers.			
Profit margin	Refers to the proportion of premium in excess of all insurer claims and expenses. Levies and GST are excluded from assessing the profit margin.			
Projected case estimate	A standard actuarial method that focuses on anticipated relationships between future claim payments and case estimates.			
Propensity to claim	Ultimate number of claims divided by the number of road casualties.			
Risk premium	Expected claim payout without expenses and profit margin.			

Term	Definition				
Scheme efficiency	The amount of each premium dollar that is returned to injured people.				
	cheme efficiency = $\frac{claim payments received by claimant (1(a))}{Premium (1(a)+1(b)+2+3+4)}$				
	where:				
	1. Claims payments:				
	 All claim costs excluding those in 1 (b). Claims costs include estimates of outstanding claims liabilities 				
	 b. Legal, investigation and medico legal costs. These costs also include estimates of outstanding claims liabilities in respect to legal, investigation and medico legal costs 				
	2. Insurer expenses				
	 Scheme expenses (the SIRA administration costs and Roads and Maritime Services (RMS) levy) 				
	4. Insurer profits.				
Superimposed inflation	The increase in claim costs over time, over and above wage inflation.				
Underwriting year	The year the CTP policy was sold.				

2. Introduction

2.1 Introduction and purpose

EY has been requested by the State Insurance Regulatory Authority (SIRA) to review the performance of the NSW Compulsory Third Party (CTP) Scheme (the Scheme). EY is the independent Scheme actuary. We have performed the review by analysing key metrics agreed with the SIRA. Results of the review are documented in this report.

This is the third time that EY has conducted this review. The previous review is documented in a summary report "Selected indicators of the performance of the NSW CTP Scheme to 2013" dated 16 March 2014 and is referred to as the "previous report". Further details of the previous review may be available on request.

This review mostly uses data up to 30 June 2014 in calculating the key metrics. Most key metrics are shown starting from late 2000 when the current Scheme commenced its operations. Key drivers of some of these metrics are shown.

The Lifetime Care & Support (LTCS) scheme is excluded from the analysis since it is managed by the Insurance & Care NSW (iCare) instead of the SIRA.

The SIRA has adopted two key indicators to assess the performance of the Scheme:

 Affordability - the premium charged for a CTP policy relative to average NSW weekly earnings. The lower the premium as a proportion of average earnings, the more affordable premiums are considered to be.

Efficiency - the proportion of premiums that is returned to injured persons as claim benefits rather than service delivery costs and insurer profit. The higher the proportion, the greater the efficiency of the Scheme. In addition to the above two key performance indicators of the Scheme, the SIRA is also monitoring the fairness of the premiums paid by vehicle owners. That is, subject to the objective for premiums to be affordable, they reflect the underlying claims experience of the relevant cohort of policies. To achieve the objective of affordable premiums the SIRA limits the extent to which insurers can vary premiums by applying loadings and discounts. Applying constraints on insurer's ability to apply loadings and discounts to premiums introduces cross-subsidies between different cohorts of policies. The extent of cross-subsidies is a measure of the extent to which premiums are not equitable. Further details are set out in section 7.

As agreed with the SIRA, this report does not measure the affordability of premiums as this work is being undertaken by the SIRA. However the report does review measures of Scheme performance that impact premium affordability (e.g. claim frequency trends).

Some of the results in this report also appear in the SIRA report titled "Motor Accidents Authority of NSW Annual Report 2013-2014." Results on Scheme profitability and efficiency may not fully reconcile due to different bases used. This is further explained in sections 5 and 6 of this report.

A considerable amount of the results presented in this report are based on regular work that has been performed by the Scheme actuary for a number of years. These results include an analysis of Scheme experience as well as actuarial projections of claims experience.

2.2 Structure of this report

Section 3 of this report provides a summary of the data used and the methodology adopted.

In assessing the efficiency of the Scheme we have considered the experience of the underlying components of CTP premiums. The following figure sets out these components.



We have analysed the main items of Scheme experience that impact the efficiency of the Scheme. These items include:

- ▶ Insurer risk premium (i.e. claims cost) in section 4
 - Claim numbers, claims frequency, propensity to claim, casualty numbers
 - Average claims size and superimposed inflation
 - Cost per policy, which combines claim frequency and average claims size
 - Experience by type of payment, heads of damage and legal representation status
 - Additional analysis of ANFs, payment patterns, claim payment duration and the impact of changes in claims inflation and interest rates not discussed in the previous report.
- Insurer profitability in section 5. Profit loadings need to achieve a balance between an adequate return on capital for insurers to ensure a financially viable scheme and affordable premiums for vehicle owners. Insurer profitability depends on claims cost per policy.
- ▶ We have investigated efficiency of the Scheme in section 6 and in particular the impact of legal and investigation costs for claims of various sizes.
- In section 7 we have reviewed some aspects of the premium system including the increase in the number of reported claims by geographic region, relative claims cost by vehicle age and driver age and the average loadings on premiums by class of vehicles.

We have provided in this report high level commentary and insights into the movements in the above metrics over time.

The previous report assessed the affordability of the Scheme based on average premium per vehicle. As agreed with the SIRA, we have not conducted this assessment for this report as the SIRA are undertaking this analysis.

3. Data and methodology

This section outlines the data, data adjustments and methodology used to perform the analyses shown in this report.

All results in this report exclude GST and exclude levies except for Scheme efficiency as explained below.

Our analyses have been based on the following data:

- Outstanding claims liability valuation as at 30 June 2014, discussed further below
- Market premium returns as at 30 June 2014
- ▶ Personal Injury Register information as at 30 June 2014
- ▶ NSW CTP individual policy data, as at 31 December 2013. This is the first time detailed individual policy data are collected by the SIRA from insurers

The availability of detailed individual policy data from insurers is a significant improvement to the data available to the SIRA to analyse and monitor Scheme experience. It provides the SIRA with additional data to better understand issues in the Scheme that needs to be considered.

3.1 Outstanding claims valuation of the Scheme

As the Scheme actuary, we have estimated the Scheme's outstanding claims liabilities as at 30 June 2014. This is our third outstanding claims valuation performed for the Scheme. The results of our valuation are documented in our valuation report "Outstanding Claims Liability Review as at 30 June 2014, Motor Accidents Authority."

We have performed the valuation using unit record claims data as at 30 June 2014 provided by the SIRA (i.e. SIRA Personal Injury Register).

For claims which are not ANFs and workers compensation recoveries, we have analysed the claims based on the maximum injury severity level recorded. The table below shows injury severity level classifications. Specialised insurer staffs classify each claimant's injury severity based on the Abbreviated Injury Scale set by the Association for the Advancement of Automotive Medicine.

Injury severity level code	Description
1	Minor
2	Moderate
3	Serious
4	Severe
5	Critical
6	Maximum
9	Unknown

Table 1: Injury severity levels classification

Throughout this report, "serious severity" refers to serious, severe, critical and maximum severities. "Minor severity" refers minor and unknown severities. Remaining severities are "moderate."

We have separately analysed ANFs and full claims. We have separated out workers compensation recovery claims from full claims. The adopted claim categorisation is shown in the figure below.

Figure 1: Breakdown of claim categorisation



3.1.1 Claim numbers

Claim numbers for each accident quarter have been predominantly estimated using the chain ladder method. For recent accident quarters we have made assumptions on claim frequency for each period.

We have adjusted our projection assumptions to be in line with emerging experience and our view of future experience. For more details refer to our valuation report.

3.1.2 Scheme claims cost

We have assessed the total claims cost for each claim category using a mix of standard actuarial models (mainly payments per claim finalised and projected case estimates models).

The claims cost for each claim category as at 30 June 2014 was further split into three types:

- ▶ Legal (plaintiff and defendant) and investigation payments
- ► Care payments including attendant care and personal care
- Other payments e.g. economic loss, non-economic loss, medical, hospital and rehabilitation.

We have adjusted our projection assumptions to be in line with emerging experience and our view of future experience. For more details refer to our valuation report.

We have adopted a set of rules to identify LTCS eligible claims and remove their related costs from historical payments for accident periods prior to the commencement of LTCS scheme in 2007. We have removed these costs so that our analysis and conclusions reflect the current Scheme.

3.2 Insurer profits

The table below shows the source of the data that was used to perform the analysis of insurer profits.

Table 2: Sources of data					
Item	Source				
Premiums	Insurers' premium returns				

Bulk-Billed ambulance and hospital costs	SIRA up to 30 September 2006
SIRA levy and Roads and Maritime Services (RMS) commission	SIRA up to 30 September 2006
Past and projected future claim payments	SIRA and EY

For periods up to 30 June 2011, all data used was provided by Taylor Fry (the SIRA's previous scheme actuary) in spreadsheets which summarise each of the components above by underwriting year. This data was originally provided to Taylor Fry by the SIRA. For periods after 30 June 2011, all data used was provided to us by the SIRA directly.

For policies written prior to 1 October 2006, insurers' CTP premiums included SIRA levy and RMS commission. For policies written thereafter, SIRA and LTCS levies have been a separate cost paid by policyholders in addition to insurer premiums. The SIRA levy aims to cover operating costs of the SIRA, the RMS commission and NSW Department of Health Bulk-Billed ambulance and hospital costs. Hence premiums and insurers' acquisition expenses exclude the SIRA levy, RMS commission and Bulk-Billed ambulance and hospital costs from 1 October 2006.

In this review we have shown insurer profitability results by accident year. The previous report provided results by underwriting year. Using an accident year basis allows results to be shown up to 2014 (ending 30 June), whereas using an underwriting year basis will only show results up to 2013 (ending 30 September). In addition using an accident year basis is consistent with the outstanding claims valuation.

3.3 Scheme efficiency

To achieve consistency with insurer profitability results, we have assessed Scheme efficiency by accident year instead of underwriting year. We have shown results from accident years 2000 to 2014.

To assess the historical efficiency of the Scheme, we have split historical premium for each accident year as follows:

- 1. Claim payments (both past and projected future) which are further split into:
 - a. Loss of earnings, medical/hospital/rehab costs, care and general damages (i.e. the amount returned to the injured person). The ratio of this component to total premium represents Scheme efficiency (the proportion of premium claim payments received by the claimant).
 - b. Legal, investigation and medico legal costs which have been estimated based on SIRA data. In contrast to the previous report, we have not adjusted for contracted-out legal costs.
- 2. Insurer expenses
- 3. Scheme expenses (SIRA and RMS)
- 4. Insurer profits.

We have assumed that:

- Claim payments received by claimants include loss of earnings, general damages, medical and related costs paid on claimants behalf, care, rehabilitation, Bulk-Billing levy and miscellaneous costs (e.g. home modifications, travel).
- Claim payments classified as legal expenses (plaintiff and defendant), investigation expenses and medico legal costs, SIRA administration costs and RMS levy are not received by claimants.

The approach and source of information used to determine the value of each item are described in the table below.

Item	Approach/components	Source
Premiums	Adjusted 2007 to 2014 to include Bulk- Billing, RMS and SIRA levies (as previous years included these items)	 Refer to section 3.2for details Bulk-Billing and SIRA/RMS levies information was provided by the SIRA
Total claims costs	Estimated Scheme claims costs	 Refer to section 3.1 for details
Split of claims cost	 Legal and investigation Other payments besides legal and investigation Includes Bulk-Billing levy 	 Refer to section 3.1 for details Bulk-Billing levy and SIRA/RMS levies information was provided by the SIRA
Legal and investigation costs	Split of legal costs into defendant and plaintiff	 Refer to section 3.1 for details
Contracted-out legal costs	Not applicable in this report	 Not applicable in this report
Insurer and Scheme expenses	 Claims handling expenses Acquisition and policy expenses Reinsurance costs Commissions SIRA/RMS levies 	 Refer to section 3.2 for details Bulk-Billing and SIRA/RMS levies information was provided by the SIRA
Insurer profits	Residual item	

Table 3: Approach/components and sources for splitting the premium

3.3.1 Claim size analysis

We have also shown Scheme efficiency by claim size band based on an analysis of finalised claims. Legally and non-legally represented claims have been separated.

We have assumed that the proportion of premium allocated to insurer and Scheme expenses, and insurer profits, are equal across all claim size bands. In our experience claim handling expenses are proportionately higher for smaller claims and therefore the efficiency results presented in this report for smaller claims are likely to be over-estimated and vice versa for larger claims.

3.4 Affordability

As agreed with the SIRA, we have not analysed Scheme affordability in this review. The approach to analysing Scheme affordability and results of the analysis are documented in the previous report.

3.5 Superimposed inflation

We have analysed superimposed inflation (SI) in the Scheme in this review. There are various definitions of SI and in this report we have defined SI as the increase in the average claims size of claims over time above wage inflation. For the purposes of measuring SI, we have defined claims cost as the total payments made at the time of claim settlement, with each payment inflated by wage inflation to the time of settlement.

In order to measure increases in the cost of similar claims over time, we have used various claim characteristics to segment the claims. We have primarily used injury severity and legal representation in our analysis. We have used detailed injury coding for some of the more detailed analyses.

3.6 Reported claim numbers by geographical region

In this review, we have examined reported claim number trends (excluding ANFs and workers compensation recovery claims) by geographical region of the vehicle most at fault. We have examined the trends by the SIRA's five rating regions and we have also analysed the increase in registered vehicle numbers by geographical region as a comparison to the changes in reported claim numbers.

3.7 Claims experience by youngest driver age and insured vehicle age

In this review, we have examined potential cross-subsidies in the Scheme by analysing claims cost trends by youngest driver age and insured vehicle age. We have used the Policy Data for this analysis; the Policy Data has linked claims to the CTP policy of the vehicle most at fault in an accident. By examining relative claims cost for the various youngest driver-ages and insured vehicle age, we can determine whether certain segments of the scheme have relative costs outside of the bonus-malus constraints and hence subject to cross-subsidies.

We have undertaken the calculation of the relative cost as the cost of a segment (e.g., under 25 year old drivers) compared to the average cost of the vehicle class. A relative cost of more/less than 1.0 means the policies in the segment costs more/less than average for the insurers to underwrite. The ability for the insurer to charge an adequate premium relies on the magnitude of the relative cost in relation to the bonus-malus range as well as the other risk factors of the policies.

The analysis shown for youngest driver age and insured vehicle age are essentially "one-way" analysis, that is, we look at the impact of one risk factor at a time assuming there is no bias on the claims experience from the other rating factors. In reality, rating factors are correlated (e.g., younger drivers may on average drive older vehicles) and forming conclusions based on a series of one-way analyses may be misleading.

For the analysis by youngest driver age, we have used owner age if youngest driver age data field is not available.

3.8 Average bonus-malus by vehicle class

In this review we have examined the average bonus-malus applied by insurers to the vehicle classes defined in the Scheme. Under the bonus-malus structure, insurers are able to apply a discount (bonus) or loading (malus) at an individual policy level using various rating factors apart from vehicle class and geographic location other than the five regions set by the SIRA.

We have applied relevant premium relativities to each vehicle class and region combination in the SIRA premium returns to calculate base premium by class and region. The average bonus-malus is then calculated as actual premiums received by class and region divided by the corresponding base premiums.

The calculated average bonus-malus is an indication of how insurers have used other rating factors to adjust the premiums in addition to those suggested by vehicle class and region relativities.

4. Scheme experience

4.1 Introduction

The NSW Scheme experience analysis shown in this section is predominantly based on results documented in our annual Scheme outstanding claims valuation report. We have also performed additional analyses where required.

This section covers:

- Actual claims experience in the year ended 30 June 2014 compared to our expected experience based on our previous annual Scheme outstanding claims valuation at 30 June 2013
- Trends in ultimate claim numbers, propensity to claim and claims frequency by injury severity, claim type and legal representation (for minor injury severity claims)
- Trends in average claims size by injury severity, claim type and legal representation (for minor injury severity claims)
- ► Trends in superimposed inflation
- Trends in Scheme claims cost per policy (overall, legal and investigation, care) excluding the impact of interest rates, split by injury severity
- ▶ Impact of interest rates and inflation on insurer premiums
- Claim payment pattern and claim duration (the average time from accident to payment)
- ► Analysis of ANF's experience pre and post MACA Amendment 2007.

4.2 Actual versus expected experience

We performed a valuation of the Scheme's outstanding claims liabilities as at 30 June 2013. As part of the analyses we have performed, we formed a view on how claim numbers and claim payments, for accidents that have occurred prior to 30 June 2013, would develop in subsequent years. This view is based on the assumptions we have made in the valuation process and is also known as the expected development in the number of claims reported and expected development in the claim payments.

We have compared the actual experience in the year to 30 June 2014 with the expected experience from the 30 June 2013 valuation. Only accidents occurring up to 30 June 2013 are reflected in the comparisons. We have only included full claims excluding workers compensation in the comparison.

The number of claims reported in the year to 30 June 2014 was 3% lower than expected. This experience was primarily driven by minor severity injuries <u>without</u> legal representation and moderate severity injuries. Despite the lower than expected overall number of claims reported, we observed higher than expected claim numbers for minor severity injuries <u>with</u> legal representation, especially in the 2010 to 2013 accident years.

Actual claim payments in the year to 30 June 2014 were higher than expected by \$49m or 4%. This was due to minor severity injuries <u>with</u> legal representation (\$69m higher than expected), partly from a higher than expected number of finalisations.

Overall, claims experience for minor severity injuries with legal representation in the year to 30 June 2014 was higher than expected (both numbers and payments). Experience of the other claim categories was generally lower than expected.

Further details on actual and expected figures are shown in the tables below. For completeness the tables include ANFs and workers compensation recovery claims.

Claim type group	Actual	Expected	Actual - Expected	Actual – Expected (%)
Minor severity (represented)	1,058	909	149	16%
Minor severity (not represented)	61	190	-129	-68%
Moderate severity	1,347	1,473	-126	-9%
Serious severity	711	705	6	1%
Subtotal	3,177	3,278	-101	-3%
ANFs	-537	-619	82	-13%
Workers compensation recovery	226	419	-193	-46%
Grand total	2,866	3,078	-212	-7%

Table 4: Actual versus expected claim numbers in 2014 for prior accident years

Table 5: Actual versus expected claim payments (in \$m) in 2014 for prior accident years

Claim type group	Actual	Expected	Actual - Expected	Actual - Expected (%)
Minor severity (represented)	547	478	69	14%
Minor severity (not represented)	16	21	-6	-26%
Moderate severity	397	393	4	1%
Serious severity	409	427	-19	-4%
Subtotal	1,368	1,319	49	4%
ANFs	2	3	-1	-40%
Workers compensation recovery	16	20	-3	-17%
Grand total	1,386	1,341	45	3%

4.3 Claim numbers and claim frequency trends

This section shows our estimated ultimate number of claims for accidents up to 30 June 2014. This includes incurred but not yet reported claims. We have included results from the previous report using data up to 30 June 2013 as a comparison.

Information is shown by accident year starting from the year ended June 2001, the first full year of the Scheme, and is split by injury severity and claim type: minor severity injuries (legally and non-legally represented), moderate severity, serious severity, ANFs (at-fault and not at-fault), and workers compensation recovery claims. References to years in this section are accident years ending 30 June.

Historically a large majority of claims for moderate severity injuries and serious severity injuries are legally represented. These proportions have been reasonably stable, unlike minor claims. Therefore we have not split moderate and serious severity injury claims into legally and non-legally represented categories.

4.3.1 Claim number trends



Figure 2: Ultimate number of claims for non-legally represented minor severity injuries



The number of claims for minor severity injuries that do not involve legal representation has decreased substantially since 2001, particularly from 2001 to 2009, and has been relatively stable since 2009 except for a slight increase in 2011 although the numbers have been lower in the last two years.

The ultimate number of claims for 2013 has reduced compared to the 30 June 2013 valuation, mainly due to lower than expected claim numbers reported during the year.



Figure 3: Ultimate number of claims for legally represented minor severity injuries



The number of claims for minor severity injuries that involve legal representation decreased sharply from 2001 to 2003 and remained relatively stable until 2008. Claim numbers climbed significantly thereafter, and have increased by 78% overall between 2008 and 2014. The increase in claim numbers was particularly significant in 2010 (567 or 16%), 2012 (610 or 15%) and 2014 (686 or 14%).

The ultimate number of claims for 2012 and 2013 has increased compared to the 30 June 2013 valuation, mainly due to higher than expected claim numbers reported during the year to 30 June 2014.

From 2001 to 2009 overall, claim numbers for minor severity injuries <u>with</u> legal representation is approximately 1.5 times claim numbers for minor severity injuries <u>without</u> legal representation. This ratio increased to 2.8 for 2010 to 2013, and is 4.0 for 2014 alone.



Figure 4: Ultimate number of claims for moderate severity injuries



The number of claims for moderate severity injuries reduced by 32% from 2001 to 2007. Since 2007 claim numbers have increased consistently every year. The overall increase from 2007 to 2014 is 61% based on our latest projection.

The ultimate number of claims from 2010 to 2013 has reduced compared to the 30 June 2013 valuation, mainly due to lower than expected claim numbers reported during the year.



Figure 5: Ultimate number of claims for serious severity injuries



The number of claims for serious severity injuries reduced by approximately 24% from 2001 to 2014, reflecting falling casualty numbers.

Claim numbers for serious severity injuries have been volatile, partly due to a low frequency compared to other severity types. Claim numbers were stable between 2007 and 2009 but decreased in 2010 and 2011. We have projected an increasing number of claims from 2011 onwards.

The ultimate number of claims for accident years up to 2013 is largely unchanged from the 30 June 2013 valuation.



4.3.1.5 Workers compensation recoveries

Figure 6: Ultimate number of claims for workers compensation recoveries

There has been a general reduction in ultimate number of workers compensation recovery claims from 2001 to 2012. This is consistent with the reduction in casualty numbers over the same period.

There was a substantial 83% decline in workers compensation recovery claim numbers from 2012 to 2014, reflecting the legislative changes to NSW workers compensation journey claims but very little change in our estimates between 2013 and 2014.

4.3.1.6 ANFs

3,000 2,500 2.000 1,500 1,000 500 2007 2008 2009 2010 2011 2012 2013 2014 2001 2002 2003 2004 2005 2006 Accident year ending 30 June 🛶 2013 At-fault ANF 🛛 🚛 2013 Not At-fault ANF 🚽 2014 At-fault ANF 🛶 2014 Not at-fault ANF

Figure 7: Ultimate number of claims for ANFs

The ultimate number of not at-fault ANFs reduced between 2001 and 2008, but increased thereafter with the increase in the ANF maximum benefit from \$500 to \$5,000. Claim numbers increased by 87% overall from 2008 to 2014 although the rate of increased has slowed markedly in the last two years.

The ultimate number of at-fault ANFs has been increasing since they were introduced in 2010 but in the last two years the rate of increase has slowed. We expect the number of at-fault ANFs to continue to increase as the awareness of this benefit increases.

There have been minimal changes in our projections prior to 2014.

4.3.1.7 Ultimate number of full claims and ANFs

The following figure combines claim numbers from various injury severities and claim types shown in sections from 4.3.1.1 to 4.3.1.6.



Figure 8: Ultimate number of full claims and ANFs

The total number of claims (including workers compensation recovery claims and ANFs) reduced between 2001 and 2008, and has been increasing thereafter. While the overall number of claim seems to have reduced in 2013, it was driven by legislative changes to NSW workers compensation journey claims. The increase in claim numbers resumed in 2014. The overall increase between 2008 and 2014 was 40%.

The recent increase was mainly contributed by claims for legally represented minor severity injuries and moderate severity injuries.

4.3.1.8 *Mix of claim numbers by severity and type*

The following figure shows the mix of claim numbers by injury severity and claim type. Claim numbers in sections from 4.3.1.1 to 4.3.1.6 are expressed as a percentage of the total.



Figure 9: Mix of claim numbers by injury severity and claim type

The proportion of claims for legally represented minor severity injuries has been increasing in recent years and represents close to 40% of total CTP claim numbers in 2014 compared to an average of about 27% between 2003 and 2007. In contrast the mix of minor severity injuries claims without legal representation has declined from approximately 20% to 10% of claims in the early 2000s to 2014.

The reduction in the proportion of workers compensation recovery claims in 2013 and 2014 is noticeable reflecting the legislative changes to NSW workers compensation journey claims.

The proportion of ANFs has also been increasing, making up 25% of total CTP claim numbers in 2014. Most of the ANFs are not at-fault claims as shown previously.

The proportion of claims arising from moderate and serious severity injuries has remained relatively stable in recent years.

4.3.2 Casualties

The following figures show the number of casualties and casualty frequency (per 10,000 registered vehicles) by accident year ending 30 June, since 2001. Due to the data entry delay of casualty data, where up to four months is required to process the casualty data from a particular accident quarter, casualty numbers for the latest two quarters are typically projected based on what has been processed so far. Projections from both 30 June 2014 and 30 June 2013 valuations are shown.





Casualty numbers have generally been decreasing since 2001 at a rate of around 2% p.a.; however, there have been some years which have observed spikes in the casualty numbers, such as, 2002, 2007 and 2012.

The spike in 2012 may be related to a change in the casualty data collection process which affects accident years 2010 to 2012. The SIRA has recently been notified by the RMS of a change in injury recording process of casualties from the middle of 2010 to the end of 2011. The injury recording process post calendar year 2011 had reverted to the process in place prior to the middle of 2010. We have adjusted the number of casualties in these affected years to remove the impact of the change to the injury recording process based on the information provided by RMS; however, a spike remains in the casualty numbers for the accident year ending 30 June 2012. Due to the adjustment process discussed above, this impacted the number of casualties for the 2010, 2011 and 2012 accident years.

In addition, casualty numbers in the 2013 accident year has reduced in our latest valuation as the actual number of casualties for this accident year is lower than the initial estimate as at 30 June 2013.





Similar to casualty numbers, casualty frequency (number of casualties per 10,000 registered vehicles) has been generally decreasing. This partially offsets the increase in claim propensity mentioned above.

4.3.3 Propensity to claim

Propensity to claim is the ultimate number of claims divided by the number of road casualties. The figure below shows the propensity to claim since 2001 for:

- ► CTP claims excluding workers compensation recovery claims and ANFs
- All CTP claims.

Figure 12: Propensity to claim



The overall propensity to claim (all claims) reduced between 2001 and 2007 although it was stable between 2002 and 2007 for claims excluding ANFs and workers compensation recovery claims. The propensity to claims has been steadily increasing since 2008. The propensity to claim for 2014 is 66%, an average increase of 4% per year between 2008 and 2014. There has been an increase in our estimates of the propensity to claim between our estimates at 30 June 2013 and 2014 due mainly to the change in casualty numbers as explained in the following section.

Overall, people injured in motor vehicle accidents are increasing likely to lodge a CTP claim (either ANF or a full claim).

4.3.4 Claim frequency

The figure below shows claims frequency since 2001 for:

- CTP claims excluding workers compensation recovery claims and ANFs
- All CTP claims.



Overall claim frequency (all claims) reduced steadily between 2000 and 2008, and has been increasing thereafter except for a slight reduction in 2013 reflecting the legislative changes to NSW workers compensation journey claims. The increase in recent years is contributed by ANFs and claims for legally represented minor severity injuries. There has been no material change in our projected claims frequency between our estimates at 30 June 2013 and 2014.

Claim frequency excluding workers compensation recoveries and ANFs has also been increasing in recent years, but at a lower rate.

The recent increase in claim frequency is mainly contributed by an increasing propensity to claim, rather than the frequency of road accidents and casualties. These two components are discussed below.

4.4 Scheme claims cost

This section shows the average claim size by injury severity and claim type.

To ensure comparability across accident years, average claim sizes are all shown at 30 June 2014 values, i.e. past claim payments have been adjusted to 30 June 2014 values using the historical Average Weekly Earnings (AWE) index, and general inflation beyond 30 June 2014 is ignored.

Average claim size figures include an allowance for superimposed inflation on future claim payments. Superimposed inflation is additional inflation above wage inflation, and is the result of legal, social and other external factors.

Average claim sizes are gross of Input Tax Credits (ITC) and Decreasing Adjustment Mechanism (DAM).

The results for average claim sizes, particularly for minor injury severity injuries, are to some extent influenced by:

 Delays in first assigning a severity level to a claim due to the change in the Abbreviated Injury Scale in 2008

- Changes in the Scheme in recent years including:
 - The increase to the maximum compensation for not at-fault-ANFs in 2008 from \$500 to \$5,000
 - ▶ The introduction in 2010 of compensation for at-fault ANFs to a maximum of \$5,000
 - ► Changes to NSW workers compensation legislation in 2012 for journey to work claims.

4.4.1 Results

In the figures below, we have included results from the 30 June 2014 and 30 June 2013 outstanding claims liability valuations. We have inflated results from the 30 June 2013 valuation to 30 June 2014 values using wage inflation for the year to 30 June 2014.

References to years in this section are accident years ending 30 June.

Differences between results as at 30 June 2013 and 30 June 2014 valuations reflect a combination of claims experience in the latest year and changes to our view of future experience including economic and superimposed inflation. Differences are greater for more recent accident years where significant claim amounts are unpaid and thus based on actuarial estimates which are more heavily influenced by emerging claims experience and changes in our views.



4.4.1.1 *Non-legally represented minor severity injuries*

The average claim size for minor severity injuries that are not legally represented has increased substantially from \$6,400 in 2005 to \$16,000 in 2014 (in 30 June 2014 values).

Average claim sizes for 2008 onwards have reduced compared to the 30 June 2013 valuation due to lower than expected average claim payment experience in the past year.

4.4.1.2 Legally represented minor severity injuries





Average claim size for minor severity injuries that involve legal representation increased significantly from 2001 to 2008 but has been relatively flat from 2008 to 2014. Our estimates of average claims size at 30 June 2014 are generally lower than our estimates at 30 June 2013 for accident years from 2010 and particularly for accident year 2013. The average claims size for 2014 is \$122,000 in 30 June 2014 values.

Given that the average claim size for minor severity injuries <u>with</u> legal representation is close to eight times that for minor severity injuries <u>without</u> legal representation, the recent increasing prevalence of legal representation amongst minor severity injury claims has contributed to an increase in overall Scheme claims cost.





Figure 16: Average claim size (in 30 June 2014 values) for moderate severity injuries

The average claim size for moderate severity injuries has increased from approximately \$130,000 in 2001 to \$214,000 in 2010, an increase of 64% overall or approximately 6% p.a. Average claim size reduced and stabilised thereafter, and is \$212,000 for 2014. Our estimates of average claim size at 30 June 2014 are generally similar to our estimates at 30 June 2013 except for accident years 2012 and 2013 where they are lower.



4.4.1.4 *Serious severity injuries*

Figure 17: Average claim size (in 30 June 2014 values) for serious severity injuries

Average claim sizes for serious severity injuries are more volatile than other injury severities due to lower claim frequency, as well as greater projection uncertainty due to "lumpy payments."

There is an increasing trend from 2002 to 2007 and this appears to have been reversed since. The average claim size is \$410,000 for 2014. Our estimates of average claim size at 30 June 2014 are generally similar to our estimates at 30 June 2013 except for accident years from 2010 to 2013 where they are lower.

4.4.1.5 Overall average claim size

Figure 18: Average claim size (in 30 June 2014 values) for all claims excluding ANFs and workers compensation



Overall average claim sizes (excluding ANFs and workers compensation recovery claims) have been relatively stable since 2004. Whilst there seems to be a slight upward trend in recent years, the experience in these years is still immature and hence subject to greater projection uncertainty.

4.5 Superimposed inflation

Superimposed inflation has been a long-term feature of personal injury schemes in Australia over many decades especially in those with common law type benefit structures. Superimposed inflation is an increase in claims cost above normal inflation (usually wage inflation) and is usually caused by a combination of legal, judicial, social, medical and other external factors. In our work we have defined superimposed inflation to be the increase in the average claims size above wage inflation.

Superimposed inflation tends to be volatile over time. NSW CTP and workers compensation schemes have experienced very high levels of superimposed inflation for a number of years and also periods of benign or negative superimposed inflation.

During the operation of the privatised NSW CTP Scheme since 1989, various actuaries have assessed the levels of superimposed inflation by generally adopting similar underlying actuarial methods to the methods we have adopted. The results from those assessments are relatively consistent.

Based on the assessment of superimposed inflation by the previous Scheme actuary, insurer actuaries and EY, since the early 1990s the levels of superimposed inflation have been:

- ► For the previous Scheme for accidents up to September 1999 the average superimposed inflation from 1992 to 1996 was approximately 14% p.a. and around 3% from 1997 to 2003 (note before 1992 there was limited claims experience to measure superimposed inflation)
- ► It was difficult to measure the superimposed inflation in the early 2000s for the current Scheme because there were limited numbers of claims finalised. Assessments of the experience to 2004 for the current Scheme indicates negative superimposed inflation for some severity levels
- ► For the current Scheme the average superimposed inflation was around 6% from 2004 to 2009 based on assessment made by various actuaries. It has been benign since then and has been approximately zero or negative since 2008.

The average superimposed inflation since 1999 was around 3% but this is a mixture of the current Scheme and the previous Scheme experience.

In the rest of this section we have undertaken additional detailed analysis of superimposed inflation since 2008:

- A more detailed technical analysis of superimposed inflation by claims type
- An investigation of superimposed inflation caused by claim mix changes
- Analysis of superimposed inflation within some claims types (in particular, within the minor severity injury claims) and by type of injury (e.g. whiplash).

4.5.1 Analysis of superimposed inflation

Table 6 shows the average cost of finalised claims by finalisation year ending 30 June and injury severity. ANFs and workers compensation recovery claims have been excluded as the cost of those claims is small. Claims finalised for less than \$5,000 have also been excluded as their cost is immaterial relative to the overall Scheme.

In the analysis below we have allocated all claim payments to the finalisation year even though some of the payments were made in earlier years. This differs somewhat to the Scheme valuation basis and is a more appropriate method for analysing superimposed inflation.

Iniury severity	Average finalised claim size by finalisation year(\$000) (June 14 values)						
	2008	2009	2010	2011	2012	2013	2014
Minor legally represented	113	124	125	126	119	120	125
Minor non-represented	21	20	24	23	21	21	23
Moderate	194	206	194	211	203	194	199
Serious	426	455	471	426	442	459	408
Overall	183	191	188	178	173	171	164

Table 6: Average finalised claim size by settlement year

The average sizes shown have been inflated to June 2014 values using wage inflation. Hence any pattern observed in the average finalised sizes can be attributed to superimposed inflation. Whilst at the overall level, average claim sizes have reduced from around \$183,000 to \$164,000 since 2008, the only material change is for serious severity injury claims. In the analysis of trends the start and end date is important as it can impact the results. For example if 2014 is excluded, then even serious severity injury claims showed no distinct trend in average sizes.

Table 7 below shows proportional increases in claim sizes. Information is shown for every year and on average across all years. The average measured superimposed information is a "fitted" figure, that is, the average increase after removing some of the volatility observed from year to year.

Table 7: Yearly change in average finalised claim size and average measured superimposed inflation

lniury sovority	Change in average finalised claim size by finalisation year						Average
	2009	2010	2011	2012	2013	2014	SI (p.a.)
Minor legally represented	9%	1%	1%	-5%	1%	5%	0.7%
Minor non-represented	-4%	17%	-5%	-6%	-1%	11%	0.8%
Moderate	6%	-6%	9%	-3%	-5%	3%	0.0%
Serious	7%	4%	-9%	4%	4%	-11%	-0.6%
Overall	4%	-2%	-5%	-3%	-1%	-4%	-2.2%

Claims for minor severity injuries (with and without legal representation) and moderate severity injuries have not experienced noticeable superimposed inflation from 2008 to 2014; however, they

do exhibit volatility from year to year. For example, year-by-year superimposed inflation for minor severity injuries with legal representation has fluctuated between -5% to +9%. For moderate severity injuries the figure has ranged from -6% to +9%.

From 2008 to 2014 a superimposed inflation of -2.2% p.a. has been measured at an overall Scheme level. Table 8 shows a breakdown of this into superimposed inflation at an injury severity level as well as the contribution by changes in injury mix. As mentioned in the previous paragraph, superimposed inflation within each injury severity level is insignificant, totaling 0.1%. The remaining measured superimposed inflation is caused by a change in the injury mix.

Injury severity	Measured SI	Contribution
Minor legally represented	0.7%	0.3%
Minor non-represented	0.8%	0.0%
Moderate	0.0%	0.0%
Serious	-0.6%	-0.2%
Contribution by all injury severi	0.1%	
Contribution by change in injury	-2.3%	
Total measured superimposed i	nflation	-2.2%

Table 8: Breakdown of measured superimposed inflation

Figure 19 shows the mix of claims by injury severity and finalisation year. The proportion of serious severity injury claims have been gradually reducing over the past seven years (19% in 2008 to 12% in 2014) while the proportion of legally represented minor severity injury claims have been increasing (46% in 2008 to 51% in 2014). The proportion of remaining claims has remained relatively stable over the past seven years.

Due to the disparity in claims sizes, changes in injury severity mix impacts the overall average claim sizes. As mentioned above over the past seven years we have seen the proportion of serious severity injury claims reducing by 7% and minor severity injury claims with legal representation increasing by 5%, at a pace of around 1% change per year. For every 1% shift from serious severity injury claims to minor severity injury claims with legal representation, the overall average claim size reduces by around 2%. This shift is the main driver of the measured superimposed inflation observed over the past seven years. If the mix continues to change in future consistent with trends over the past seven years then superimposed inflation will continue to be negative even if superimposed inflation within each injury severity level continues to be close to zero.



Figure 19: Mix of finalised claims by injury severity level and finalisation year

4.5.2 Analysis by whiplash injuries

We have examined finalised claim mix and finalised claim size trends by splitting the above claim categories into whiplash and other injuries. A change in the mix of injury types within a claim category can hide or accelerate the measured SI if the average claim size is different by injury type.

Figure 20 to Figure 22 shows the results of our analysis for the various claim categories – minor severity injuries with legal representation, moderate severity injuries and serious severity injuries. Within each claim category, the finalised claim mix and average finalised claims sizes for whiplash and other injuries are relatively stable. The trends are more volatile for claims with serious severity injuries due to fewer claims in this category and the inherent higher volatility due to the nature of more complicated claims.

Given the lack of clear trends in these figures, whiplash injuries do not seem to have impacted on superimposed inflation.



Figure 20: Mix of claim numbers (left) and average claim size (right) for minor severity injuries with legal representation



Figure 21: Mix of claim numbers (left) and average claim size (right) for moderate severity injuries





4.6 Claims cost per policy

The figure below shows the cost per policy for all Scheme claims, including ANFs and workers compensation recovery claims, by accident year ending 30 June since 2001. The cost per policy is the total cost of claims divided by the number of insured motor vehicles in the Scheme.

The claims cost is calculated by adding past claim payments and projected future claim payments allowing for wage and superimposed inflation.



Figure 23: Cost per policy for all claims and ANFs

The numbers in the figure are gross of ITC and DAM. Other claims include non-legally represented minor injury severity claims, ANFs and workers compensation recovery claims.

Overall cost per policy was relatively stable until 2008 and has increased significantly thereafter. The cost per policy in 2014 is projected to be \$379, compared to \$241 in 2001. Of the \$379, the highest contributor is legally represented minor severity injury claims (\$156 or 41% of the total), followed by moderate severity injury claims (\$113 or 30% of the total), and serious severity injury claims (\$103 or 27% of the total). The percentage annual average increase in cost per policy from 2008 to 2013 was 5% and the increase from 2013 to 2014 was 17%.

The main driver of the increase since 2008 is a higher frequency of claims from the minor severity injuries with legal representation and moderate severity injuries. Claims cost from serious severity injuries has also increased recently although there are no clear signs of a longer term trend.

Other claims (workers compensation recovery claims, non-legally represented minor injury severity claims and ANFs) represent less than 5% of claims cost.

There is considerable uncertainty in the estimates for recent years because a significant portion of claims are unpaid and hence based on actuarial estimates. Actual claim payments may be higher or lower than the actuarial estimates.

We have also split the cost per policy into legal and investigation payments and other payments. The results are shown in the following sections.

4.6.1 Legal and investigation cost per policy

To assess efficiency in a largely common law Scheme we have analysed the legal and investigation costs per policy. Over 90% of this cost is legal cost.

The figure below shows our estimated legal and investigation cost per policy for claims excluding nonlegally represented minor claims, workers compensation recoveries and ANFs. Future claim payments allow for expected wage and superimposed inflation.

Information is shown by accident year ending 30 June starting from 2001 up to 2014.



Figure 24: Legal and investigation costs per policy

Total legal and investigation cost per policy remained relatively stable but still showed an upward trend from 2001 to 2008.

Legal and investigation cost per policy started to increase significantly from around 2008 especially from 2012. The overall increase between 2008 and 2014 is 49%, and the increase in 2014 alone is 16%. The increase mainly due to minor severity injury claims and to a smaller extent moderate severity injury claims. As shown in section 4.3, the number and frequency of these claims have been increasing significantly recently.

For 2014, minor severity injury claims made up close to half of the overall legal and investigation cost. The remaining legal and investigation cost is split evenly between moderate and serious severity injury claims. In contrast, minor severity injury claims contributed 34% of legal and investigation costs prior to 2008.

4.6.2 Claims cost per policy excluding legal and investigation costs

The figure below shows the estimated claims cost per policy excluding legal and investigation costs for full claims excluding non-legally represented minor severity injury claims, workers compensation recoveries and ANFs. Future claim payments allow for expected wage and superimposed inflation.

Information is shown by accident year ending 30 June starting from 2001.



Figure 25: Claim costs per policy excluding legal and investigation costs

Similar to legal and investigation cost per policy, non-legal and investigation cost per policy remained relatively stable from 2001 to 2008, and increased significantly by 53% between 2008 and 2014. The increase is mainly contributed by minor severity injuries followed by moderate severity injuries.

4.6.3 Care costs

Our first Scheme performance report highlighted the increase in care costs (i.e. attendant care and personal care) at very high rates since 2000 (i.e. high rates of superimposed inflation) relative to other payment types. The figure below shows the estimated care cost per policy for full claims excluding non-legally represented minor claims, workers compensation recoveries and ANFs. Future claim payments allow for expected wage and superimposed inflation.



Figure 26: Care costs per policy

Minor Rep Moderate Serious

Care cost per policy remained relatively stable between 2001 and 2004, and increased steadily thereafter. Care cost per policy was \$18 in 2004, and increased to \$42 in 2014. The increase was contributed by all injury severity types, but most notably legally represented minor severity injury claims followed by moderate severity injury claims. The cost of care per policy for minor severity

injury claims increased from about \$5 in 2004 to about \$18 in 2014 while for moderate severity claims the figure increased in the same period from about \$4 per policy to about \$14. In both cases the increase was nearly fourfold between 2004 and 2014.

The percentage increase in care cost per policy between 2008 and 2014 is 38%, which is lower compared to legal and investigation cost over the same period (49%), and non-legal and investigation cost (53%). The increase in care costs have slowed in recent years compared to earlier years.

4.6.4 Composition of claims payments by head of damage

The following figure shows a split of finalised claim costs by head of damage from 2008 to 2014. Information is shown by finalisation year ending 30 June. This is on a different basis to the graphs in the sections 4.6.1 to 4.6.3, which are based on projections on an accident year basis. Figure 27 is based on actual payments on a finalisation year basis.

There has been no obvious trend in the split since 2008. Economic loss forms the highest proportion of finalised claim costs (around 35%) followed by legal and investigation costs (around 20%). The composition of the claim payments has remained relatively stable over the last six years.



Figure 27: Mix of finalised claim payments by heads of damage

4.7 Impact of interest rates and inflation on average Scheme premium

Insurance premiums are collected to pay future claims. Premiums are collected upfront and therefore earn an investment return which partly covers future claim payments. Interest rates affect investment returns and hence the premium amount charged by insurers. For instance, when interest rates are low, insurers earn less investment return on premiums, in turn putting upward pressure on premiums required to be charged (everything else equal).

In addition Scheme claim payments are typically linked to inflation. Hence future wage and superimposed inflation are important drivers of premium, with higher inflation increasing premium and vice versa.

The following analyses the impact of recent changes in interest rates and inflation on the average Scheme premium. The sensitivity of the average Scheme premium to future changes in interest rates and inflation is also analysed. Average Scheme premium is the average premium charged per policy written under the Scheme.

The weighted average interest rate reduced from 4.2% in the previous valuation (June 2013) to 3.6% in the current valuation (June 2014), while the average wage inflation expectation increased, from 3.6% to 3.9%. The estimated impact of these changes on average Scheme premium relies on the following assumptions:

- An average claim duration of 4.5 years (refer to next section)
- Average premium of \$400 excluding GST and MCIS levy (based on 2013 underwriting year)
- Claim payments and claim handling expenses are 79% of premium (from 2013 underwriting year)
- ► All premium components (including expenses) are impacted by wage inflation
- Only claim payments and claim handling expenses are paid after premium collection and hence affected by interest rates
- ▶ No change in insurers required return on capital.

The impact of the recent reduction in interest rates is a 1.8% or \$7 increase in the average premium (excluding GST and MCIS levy), while the impact of the increase in wage inflation expectation is a 1.3% or \$5 increase.

The following table shows the approximate change in average premium as a result of future changes in interest rate, wage inflation and superimposed inflation. The calculations are based on a risk premium analysis performed for the Scheme as at 1 January 2015. The current assumption for superimposed inflation is 2%, based on the June 2014 outstanding claims valuation. An average premium of \$400 based on the 2013 underwriting year is again assumed (excluding GST and MCIS levy) although future premiums are likely to be higher due to inflation and claims experience deterioration.

Factor	Scenario	Percentage change in average premium	Dollar change in average premium
Interact rate	Increase by 1%	- 3.4%	-\$14
Interest rate	Decrease by 1%	+3.6%	+\$14
Wage inflation	Increase by 1%	+4.7%	+\$19
	Decrease by 1%	- 4.4%	-\$18
Superimposed inflation	Decrease by 2%	-8.3%	-\$33
	Increase by 2%	+9.3%	+\$37

Table 9: Sensitivity of average premium to changes in interest rate and inflation

For example if interest rates fell by 1% the average premium would increase by 3.6% or about \$14 (assuming an average premium of \$400) before MCIS levy and GST and \$17 after including both MCIS levy and GST. A similar calculation applies to other sensitivities in the above table. Adding GST and MCIS levy would increase the above impact by approximately a further 40%.

Also note there could be a combination of scenarios occurring, for example an increase in interest rate and wage inflation. In this case the overall impact is calculated by adding the above sensitivities although note that results are approximate.

4.8 Claim payment pattern and duration

The following figure shows the assumed payment patterns from the 2014 and 2012 outstanding claims valuations for the Scheme. Payment pattern refers to the timing of the cashflows leaving the Scheme for a cohort of claims rather than when the claims are finalised. Information is shown by payment year, and includes the impact of wage and superimposed inflation but excludes the impact of interest rates. The payment pattern relates to a cohort of claims from the current accident year.



Figure 28: Proportion of claim payments made in various years

Compared to the 2012 payment pattern, the 2014 payment pattern assumes a higher proportion of claim payments are made in earlier years after the date of accident. This is reflected in a reduction in implied average time to payment (2014: 4.5 years, 2012: 4.7 years). The reduction is observed across all severity type claims.

4.9 Analysis of ANFs

We have analysed the experience of ANFs in the Scheme and how they were impacted by the MACA Amendment 2007 (MACA 2007) (extending the ANF threshold from \$500 to \$5,000 amongst other changes). The second reading speech at the time MACA 2007 was introduced into parliament stated the reasons for the increase in the ANF threshold as:

"simplify the claim process for motor accident victims with more minor injuries"

In discussion with the SIRA this reason has been interpreted as to provide more access to compensation via ANFs which are much simpler to make and result in:

- ▶ Reductions in the number of small full claims being made
- Reductions in the number of minor severity injury claims requiring legal representation.

Full claims are more complex than ANFs for claimants to make and for insurers to process and manage, partly due to a potential for legal involvement.

The figure below shows the number of full claims and ANFs by accident quarter. Not at-fault and atfault ANFs are shown separately. The number of full claims and ANFs both reduced between 2003 and 2008. However, since the introduction of MACA 2007, both numbers reversed the earlier trend and have since increased. Whilst the increase in the number ANFs was expected due to an increase in the threshold from \$500 to \$5,000, an offsetting reduction in the number of full claims was not observed. Since October 2008 the number of ANFs has increased gradually while the number of full claims has increased at a faster pace (even after normalising for the number of vehicles). See earlier parts of section 4 for more details on claim numbers and frequency.

Figure 29: Number of full claims and ANFs by accident quarter



Figure 30 shows the number of minor severity injury claims converted from ANFs that are legally represented and not represented. Whilst we have analysed the claims experience to June 2014 we have only included the experience to June 2013 as:

- The claims experience in the latest year is distorted since it can take over 12 months for the severity of a claim to be assessed based on the medical evidence
- ► There are significant reporting delays for full claims and to a lesser extent ANFs.

We have adopted this time period for the other figures shown in this section.

For minor severity injury claims there were reducing trends in both legally represented and nonrepresented claims prior to the effective date of MACA 2007 of 1 October 2008. Since 1 October 2008 there was an immediate sharp increase in the number of legally represented claims and the increase has been continuing. Whilst the non-legally represented claims converted from ANFs also increased in numbers, the pace is materially slower than that of legally represented claims.



Figure 30: Number of not-at-fault legally represented and non-represented minor severity claims converted from ANFs

Similar trends are observable for moderate severity claims.

The following two figures show the number of legally represented and non-represented claims. The first shows claims converted from ANFs and the second shows claims directly reported as full claims (i.e. no ANF was submitted). Both figures show a noticeable increase in the number of legally represented claims immediately post MACA 2007. However, non-represented claims have remained relatively stable or even reduced in the case where no ANF was submitted.



Figure 31: Number of legally represented and non-represented claims converted from ANFs



Figure 32: Number of legally represented and non-represented claims where ANF was not made

The figures above clearly show that there was a significant change in claims behaviour in the Scheme immediately from the effective date of MACA 2007. The increase in the ANF threshold from \$500 to \$5,000, for reasons that are unknown to us, seems to have been a catalyst for an increase in the number of legally represented claims and an increase in the overall number of full claims, especially for minor and moderate severity injury claims as illustrated in section 4.3.

The analysis set out in this section appears to show that the objectives of MACA 2007 do not seem to have been achieved. We are not aware of any other changes in the Scheme or the behaviour of claimants and lawyers that may have caused the change in Scheme experience.

5. Insurer profits

5.1 Introduction

This section provides estimates, based on analysis of Scheme claims data as at 30 June 2014, of the profitability of CTP policies underwritten by insurers since the Scheme commenced in October 1999.

The profitability of CTP policies is estimated as:

Premium income

- plus Investment income on premiums
- less Insurers' expenses excluding claim handling expenses
- less Claim payments (which include plaintiffs' and defendants' legal costs and claim investigation costs)
- less Insurers' claim handling expenses.

Claim payments and claims handling expenses are discounted from the time of payment to the middle of each accident year using interest rate available at the time. This allows for investment income earned on the residual premium after deducting expenses, between the claim accident date and payment date. We have assumed that insurers investment income returns are equal to those included in their rate filings set out in their premium rate filing submitted to the SIRA.

In this report, we have shown figures by accident year ending 30 June. The previous report showed figures by underwriting year ending 30 September. The reasons for changing from an underwriting to accident year basis (see Glossary for definitions) are:

- It provides more up to date information on insurer profits. For example if the underwriting year basis was used, as in previous reports, we would be reporting on profits up to underwriting year 2013 but using an accident year basis we are able to report on accident year ending June 2014
- The basis is consistent with the valuation of outstanding claims liabilities which is undertaken on an accident year basis.

Note that the figures in this report do not reconcile by individual year as premiums, claims and expenses are allocated across years differently but in total across all years the figures reconcile.

References to years in the remainder of this section are accident years ending 30 June.

The above profit calculation assumes that:

- ► The expenses excluding claims handling expenses were paid by insurers at the same time as the corresponding premiums were received
- ▶ Premium is earned uniformly across the underwriting year.

This approach is intentionally somewhat simplistic and is used for reporting purposes. It estimates profits or losses made by insurers without allowing explicitly for the cost of insurers' capital held in order to support the business.

The estimation of profit is uncertain and complicated by the fact that CTP claims take a number of years to settle, due to the involvement of medical, legal and judicial outcomes. Hence it can be many years before the profit earned on a CTP policy can be estimated with any certainty. Assessment of profit (especially for the more recent accident years) is largely based on models and assumptions on expected claims experience. Actual claim outcomes may eventuate to be materially different to the

expected outcomes. As actual claims experience gradually replace the estimates from the models over time, the hindsight assessment of profit may change as a result.

Premium written, estimates of insurers' acquisition costs and net cost of reinsurance, Bulk-Billed ambulance and hospital costs, and discount rates for past underwriting years are assumed to remain unchanged over time. Therefore changes over time in profit or loss estimates are entirely attributable to changes in projections of claim payments and associated claims handling expenses.

5.2 Premium

The industry premium income excluding the MCIS levy and GST is shown in the following table. These premium figures are earned by accident year.

Accident year ended 30 June	Premium income* (\$m)
2000	1,499
2001	1,321
2002	1,322
2003	1,355
2004	1,423
2005	1,474
2006	1,446
2007	1,387
2008	1,192
2009	1,207
2010	1,380
2011	1,574
2012	1,717
2013	1,841
2014	2,053

Table 10: Industry premium income for accident years ending 30 June

* 2000 – 2006: includes SIRA levy

2007 - 2014: excludes SIRA and LTCS levies

Premium income fell by 16% between 2004 and 2008, and increased thereafter. Premium continued to increase in 2014, by 12% to \$2,053m. Please refer to the previous report for further discussion of possible reasons behind the historical movements.

5.3 Expenses excluding claims handling expenses

Insurer expenses excluding claims handling expenses (CHE) include business acquisition expenses and the net cost of reinsurance. These expenses are estimated based on the weighted average of insurers' rate filings for each underwriting year.

Acquisition expenses are expenses incurred by insurers to acquire and retain CTP business. These expenses include personnel costs and associated costs (e.g. rent, insurance premiums), IT costs, finance costs (e.g. accounting, audit, actuarial), stationery, marketing and advertising costs, commissions, reinsurance and other costs including overheads.

The following table shows the adopted business acquisition expenses, commission and net cost of reinsurance in estimating profitability of the Scheme.

Accident year ended 30 June	Insurers' acquisition expenses excluding commission and reinsurance* (\$m)	Commission (\$m)	Net cost of reinsurance (\$m)	Insurers' acquisition expenses and net cost of reinsurance* (\$m)	Year on year change (%)	Percentage of earned premium (%)
2000	117	42	20	179		12%
2001	130	30	17	177	-1%	13%
2002	135	26	19	181	2%	14%
2003	137	27	24	187	4%	14%
2004	144	26	35	205	9%	14%
2005	155	26	42	223	9%	15%
2006	159	24	40	223	O%	15%
2007	144	24	35	203	-9%	15%
2008	133	23	26	182	-10%	15%
2009	128	24	20	171	-6%	14%
2010	139	27	18	185	8%	13%
2011	152	32	18	202	9%	13%
2012	164	34	18	216	7%	13%
2013	171	37	13	221	2%	12%
2014	180	40	9	229	4%	11%

Table 11: Insurers' business acquisition expenses and net cost of reinsurance by accident year ending 30 June

* 2000 – 2006: includes SIRA levy, RMS commission

As a percentage of premiums, expenses excluding CHE increased from 12% to 15% between 2000 and 2005, and have since remained steady. The expense percentage started to decrease from 2009, and is currently 11% of premium. The decrease is mainly caused by net reinsurance cost.

The composition of expenses varies by insurer due to different operational structures. Insurers may also report expenses on different bases, partly due to their different approaches to internal expense reporting. Further discussion can be found in the previous report.

Bulk-Billed ambulance and hospital costs, which are part of the SIRA levy, have been paid by the SIRA after 30 September 2006. Therefore, no cost has been assumed for accident years associated with underwriting year 2007 and onwards.

5.4 Claim payments

We have estimated the discounted value of claim payments which consists of:

- Actual claim payments made up to 30 June 2014 claim payment information is provided by the SIRA
- Estimated outstanding claim payments as at 30 June 2014 based on our outstanding claims valuation as at 30 June 2014. These are intended to be central estimates in the sense that they are represent the average outcome of future claims experience with no over or under bias.

For each accident year the table below shows our estimate claim payments discounted to the middle of each accident year (in dollar values and as a percentage of earned premium) and the proportion of the claim payments that are attributable to actual payments made up to 30 June 2014.

Table 12: Discounted value of claim payments by accident year ending 30 June

Accident year ended	Discounted claim payments*	Percentage of premium	Proportion attributable to
30 June	(\$m)	(%)	claim payments up to 30

June 2014

2000	773	52%	98%
2001	685	52%	98%
2002	698	53%	98%
2003	673	50%	97%
2004	819	58%	98%
2005	775	53%	96%
2006	839	58%	92%
2007	808	58%	95%
2008	807	68%	92%
2009	925	77%	85%
2010	997	72%	77%
2011	1,035	66%	60%
2012	1,172	68%	35%
2013	1,326	72%	14%
2014	1,563	76%	2%

*Discounted to the middle of each accident year using prevailing interest rates. This is to allow for investment income earned by insurers on premium after deducting acquisition expenses.

Total discounted claim payments have been increasing steadily since the beginning of the Scheme. Discounted claim payments are \$1,563m for accident year 2014.

Claim payments as a percentage of premiums have also been increasing. This proportion ranged from 50%-53% from 2000 to 2003, and generally increased thereafter (although with volatility in between). Claim payments were 66% to 76% of premium for the past five accident years up to 2014.

For recent accident years, a smaller proportion of estimated claim payments have been paid by 30 June 2014. In particular only 2% of estimated claim payments for accident year 2014 have been paid and the remaining 98% is outstanding. This implies that estimated claim payments for recent accident years are relatively more uncertain and may change subsequently as claims experience emerge.

Further information and commentary on the Scheme's claims experience are found in section 4.

5.4.1 Claims handling expenses

We have calculated claims handling expenses (CHE) as a percentage of total risk premium and then applied the selected percentage to discounted claim payments.

The following table shows the adopted CHE percentage allowance and discounted CHE amount (in dollar values and as a percentage of earned premium).

Table 13: Adopted CHE percentage allowance, CHE amounts by accident year ending 30 June

Accident year ended 30 June	Adopted CHE allowance (%)	Discounted CHE (\$m)	Percentage of earned premium (%)
2000	6.5%	50	3%
2001	6.5%	45	3%
2002	6.5%	45	3%
2003	6.5%	44	3%
2004	6.5%	53	4%
2005	7.3%	57	4%
2006	7.3%	61	4%
2007	7.3%	59	4%
2008	7.3%	59	5%
2009	7.3%	68	6%

2010	7.3%	73	5%
2011	6.5%	67	4%
2012	6.5%	76	4%
2013	6.0%	80	4%
2014	6.0%	94	5%

There has been a steady increase in the discounted CHE percentage (of claims) from 6.5% in 2000 to 7.3% in 2010. Since then the percentage has decreased and is around 6.0% for 2014. When expressed as a percentage of earned premium, CHE increased from 3% in 2000 and is currently 5% for 2014.

5.5 Results

Based on the above results, the estimated insurer profitability for CTP policies from 2000 to 2014 accident years ending 30 June is shown in the following table.

Accident year ended 30 June	Premium earned (a)	Estimate of insurers' acquisition	Bulk-Billed ambulance and hospital costs	Estimated discounted value of:		Estimate of discounted value of profit/(loss) for insurers:	
		expenses and net cost of reinsurance (b)	(C)	Central estimate of claim payments	Insurers' claims handling expenses	Profit (f)	Percentage of premium
		~ /		(d)	(e)		(g)
	(\$m)	(\$m)	(\$m)	(\$m)	(\$m)	(\$m)	(%)
2000	1,499	179	36	773	50	461	31%
2001	1,321	177	36	685	45	378	29%
2002	1,322	181	36	698	45	362	27%
2003	1,355	187	39	673	44	412	30%
2004	1,423	205	42	819	53	305	21%
2005	1,474	223	41	775	57	378	26%
2006	1,446	223	42	839	61	281	19%
2007	1,387	203	0	808	59	316	23%
2008	1,192	182	0	807	59	144	12%
2009	1,207	171	0	925	68	44	4%
2010	1,380	185	0	997	73	125	9%
2011	1,574	202	0	1,035	67	269	17%
2012	1,717	216	0	1,172	76	253	15%
2013	1,841	221	0	1,326	80	214	12%
2014	2,053	229	0	1,563	94	166	8%

Table 14: Estimate of profitability of past NSW CTP premiums written by licensed insurers, by accident year ending 30 June

(a) Refer to Section 5.2.

(b) Refer to Section 5.3.

(c) Refer to Section 5.3.

(d) Refer to Section 5.4.

(e) Refer to Section 5.4.1.

(f) (a)-(b)-(c)-(d)-(e)

(g) (f)/(a)

There was one accident year which had a profit margin below 8% (2009) and two accident years with a profit margin between 8% and 10% (2010 and 2014). Note that the average premium profit margin filed by insurers since 2000 has been approximately 8%.

Due to the change of basis (from underwriting year to accident year) in the analysis of profit margin in this review, we have carried out a reconciliation of the results on an accident year basis and on an underwriting basis. The subsequent table compares estimated profit on the following bases:

- By underwriting year ending 30 September using data up to 30 June 2013. This information can be found in the previous report
- ▶ By accident year ending 30 June using data up to 30 June 2013
- ▶ By accident year ending 30 June using data up to 30 June 2014.

Table 15: Comparison of profit by accident year (ending 30 June) and underwriting year (ending 30 September)

Accident / underwriting year	Profit by und Jun	lerwriting year using e 2013 data	Profit by a June	ccident year using e 2013 data	Profit by a June	ccident year using e 2014 data
	Profit	Profit margin	Profit	Profit margin	Profit	Profit margin
	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)
2000	394	30	464	31	461	31
2001	376	29	381	29	378	29
2002	411	31	372	28	362	27
2003	346	25	415	31	412	30
2004	409	28	307	22	305	21
2005	343	24	381	26	378	26
2006	319	22	297	21	281	19
2007	214	18	327	24	316	23
2008	109	9	156	13	144	12
2009	87	7	54	4	44	4
2010	232	15	105	8	125	9
2011	268	16	234	15	269	17
2012	92	5	172	10	253	15
2013			58	3	214	12
2014					166	8
Total	3,600	20	3,723	20	4108	19

Due to the different definitions of accident year and underwriting year, a particular underwriting year is more comparable to the subsequent accident year; for example, the 2012 underwriting year would be more comparable to the 2013 accident year rather than the 2012 accident year.

The above table shows the change from an underwriting year basis to an accident year basis has simply reallocated the profit, the overall profit margins for both bases are 20%. The slightly higher total profit figure using the accident year basis (by 3%) is due to the slightly longer period of data used; that is, the 2000 accident year includes policies written in the 1999 underwriting year.

In the estimate of outstanding claims liabilities the major uncertainty is the average claims size as it takes many years for all claim payments to be made under the NSW CTP Scheme (i.e. over 10 years). One measure of the impact of variations in average claims size have on the level of outstanding claims liabilities and hence insurer profits is the change in level of superimposed inflation as we have defined it. Future variations in the number of late reported claims will have a relatively small impact on the level of outstanding claims liabilities and hence insurer profits.

The following illustrates the variability in profit from accident years 2009 to 2014 if superimposed inflation were to unexpectedly improve or deteriorate compared to the current assumption of 2%.

Profit is presented under five scenarios:

- 1. Superimposed inflation reduces to 2% p.a.
- 2. Superimposed inflation reduces to 0% p.a.
- 3. Superimposed inflation remains at 2% p.a.
- 4. Superimposed inflation increases to 4% p.a.
- 5. Superimposed inflation increases to 6% p.a..

The following figure shows profit margin under each of the above five scenarios. Recent accident years are expected to have larger profit variability as a significant portion of claims cost is unpaid. For accident year 2014, profit margin varies by approximately 5% for every 2% change in superimposed inflation.



Figure 33: Expected profit margin under different superimposed inflation scenarios

5.6 History of insurers' profit

The figure below shows the hindsight assessment of profit margins for each accident year ending 30 June from 2000 to 2014. The hindsight assessment is made for each reporting year starting from 2001. The previous report provided results by underwriting year ending 30 September.

For a given accident year, premiums earned, acquisition costs, net cost of reinsurance, Bulk-Billed ambulance and hospital costs and discount rates are assumed to remain unchanged in subsequent reporting years. Hence changes in profit margins for a given accident year over time are entirely attributed to changes in projected outstanding claim payments and claim handling expenses.

The profit estimates are based on the SIRA's (previously Motor Accidents Authority) annual report except for reporting years from 2004 to 2006. For reporting years from 2004 to 2006, SIRA's published profit estimates allow a 15% margin on the central estimate of outstanding claims liabilities. Therefore, for these reporting years, we have used profit estimates from a letter prepared by Taylor Fry titled "Hindsight estimates of insurers' profit referred to in submissions to the Standing Committee on Law and Justice from the Australian Layers Alliance ("ALA") and the NSW Bar Association ("NSW BA")", dated 10 June 2010.

For 2012 to 2014 reporting years, profit margins by accident year are calculated ground-up by assuming a uniform earning pattern of premium, acquisition costs and other initial expenses. For earlier reporting years, we estimated the profit margin on an accident year basis as a weighted average of the profit margins from the relevant underwriting year shown in the previous report.

The average filed profit margin since 2000 is also shown.



Figure 34: History of CTP profit for each accident year

It can be seen from the figure above that the profit margin was very high for accident years 2000 to 2005, i.e. first five years of the MACA scheme, but it is not without precedent. Premium written during the first two years of the amended Motor Accidents Act 1988 (the Old Act) produced very high profits for insurers. This is because premium rates were fixed for the first two years and actual claims costs turned out to be much lower than projected before the Old Act commenced. There was a reduction in claim frequency after MACA came into effect due to a range of arguably non-recurring factors. This appears to have led to the high profitability in the first five years since MACA commenced.

Profit margins for more recent accident years are lower and closer to the average filed profit margin of 8% but on average still significantly above 8%.

For Scheme profitability prior to 2000, refer to a Taylor Fry letter titled "Hindsight estimates of insurers' profits referred to in submissions to the Inquiry into the Exercise of the Functions of the Motor Accidents Authority and the Motor Accidents Council – Eleventh Review", dated 14 October 2011. Policies written from 1990 to 1992 and 1996 to 1999 underwriting years were profitable whereas policies written from 1993 to 1995 were loss making.

We have explored the reasons for the high profits, significant variability in profits between underwriting years and variable assessments of insurer's profits over time. Our insights at a high level of the drivers of the results are summarised below. We have divided our comments for the five underwriting years from 2000 to 2004 and from 2005 and later as the patterns of the emerging profits are different.

For accident years 2000 to 2004 there are three key reasons for the high profits emerging. It is not possible to quantify the impact of each as there are significant interaction impacts:

► In the original costings for the current Scheme in 1999, claims frequency was assumed to be at a level similar to the recent experience for the previous Scheme since claimants were still entitled to economic loss and medical and associated benefits under the current Scheme. However experience emerged at a much lower level in the current Scheme compared to 1999 as illustrated in section 4.3 above. The claims frequency did not reduce to a new level at the start of the current Scheme, nor align with casualty numbers. Instead it continued to reduce from 1999 for four years and during that time it nearly halved. The reduction in claims frequency was substantially more than the reduction in casualties during this period. The causes of the reduction in claim frequency are unclear.

In personal injury schemes, delays in reporting of claims defer the understanding of emerging claims experience for a significant period. Consequently except for some small reductions it took about two years for insurers to recognise the significance of the reduction in claims frequency and adjust assumptions in rate filings (note there is up to a six month delay between an insurer analysing claims experience to the date new premium rates are effective). However the continued reduction in claims frequency resulted in claims frequency assumptions being too high for a number of years in insurer's premium rate filings.

Additional uncertainty is associated with a significant reduction in claims frequency as the impact on average claims size can be unclear for many years. In absence of contrary evidence, in situations where a significant reduction cannot be explained by a corresponding reduction in casualties, it is logical for actuaries to assume the reduction in claims is due to minor severity claims not being reported. The reasoning is that these claims forgo little benefits by not reporting a claim compared to moderate and serious severity claims.

Past superimposed inflation experience for both the previous and current Scheme from late 1999 until 2003 was benign. As the basis of premiums for the current Scheme from 1999 for a number of years was the previous Scheme claims costs adjusted for changes to allow for the reforms, the absence of superimposed inflation reduced the assessed hindsight cost of claims.

In addition, actuarial assumptions of superimposed inflation in the early years of the current Scheme were on average about 4% to 4.5% p.a. while actual experience was much less.

The difference in the assumed average claim size experience and superimposed inflation compared to the adopted assumptions contributed significantly to the additional insurer profits in the first five years of the Scheme. Relatively small changes in assumptions and changes in the superimposed claims experience over a few years can have a significant impact on premiums, outstanding claims liabilities and emerging insurer profits.

► In insurer premium rate filings from 1999 for up to five years, insurers generally assumed the 1999 legislative changes would only be about 80% to 85% effective which increased premiums. As the experience of the Scheme emerged it became apparent the legislative reforms were more effective than had been assumed by the insurers and allowed for in premium rate filings and in the initial costing of the reforms by actuaries in 1999.

This is not unusual as costing of legislative reforms is very difficult and the results are much more uncertain than normal premium rating assessments of an established scheme with considerable past claims experience.

This assumption made a significant contribution to the additional profits in the first five years of the Scheme.

<u>For accident years from 2005 to 2014</u> the main reasons for the high profits emerging and the increase in assessed profits over time are noted below. It is not possible to quantify the impact of each source of additional profits as there are significant interaction impacts:

► For accident years 2005 to 2007 the main reasons for high profits were:

- ► The decline in claims frequency continued from 2004 until 2007 and was greater than insurers and actuaries anticipated
- ► The benign levels of superimposed inflation in the last five years also contributed to higher profits in 2005 and 2006 accident years but to a lesser extent than later accident years
- ► The slow recognition of the low superimposed inflation from years 2000 to 2003, where the assumptions adopted for premiums in the years 2005 to 2007 were higher than what emerged in hindsight.
- ► For accident years 2008 to 2014 The benign level of superimposed inflation in the last five years is the main contributor to the higher profits. Each year of superimposed inflation experience that was less than that assumed when the business was written increased the estimated profit, hence the upward slope of the profit lines in the above chart. As the actuaries adjust the assumed superimposed inflation down the estimated profit increases. As noted above the impact of this experience is significant on premiums and insurer profits.

Offsetting the impact of superimposed inflation has been the increased claims frequency and increased claims with legal representation since 2008.

6. Scheme efficiency

6.1 Introduction

Scheme efficiency is a key measure of the Scheme performance and can be viewed by stakeholders as an indicator of value for money. Efficiency is defined as the proportion of premium paid as claims cost.

The LTCS scheme is excluded from the efficiency analysis since it is not managed by insurers.

We have adopted the above definition of efficiency as it consistent with definitions adopted by other accident compensation schemes in Australia. GST is also excluded from the premium.

6.2 Contracted-out and other legal costs

This report does not allow for contracted-out legal costs as the work that was the basis to estimate contracted-out legal costs is now six years ago and becoming outdated. As a result the true underlying Scheme efficiency is likely to be lower than the results shown in this report.

Future reports will contain analysis of full plaintiff legal costs, including contracted our costs, from the data the SIRA will collect from legal firms. This data is a requirement in the recently enacted legislation Motor Accidents Compensation Regulation 2015.

6.3 Results

6.3.1 Overall Scheme efficiency results

The following figure shows the split of premium for accident years 2000 to 2014 ending 30 June. The yellow bars indicate the efficiency of the Scheme in each accident year, i.e. the proportion of premium paid out as claims.

The previous report showed efficiency and insurer profitability results by underwriting year, whereas this report shows both indicators by accident year. Reasons for showing results by accident year instead of underwriting year are discussed in section 5.1.



Figure 35: Split of premium <u>before</u> adjustment for contracted-out legal costs

Scheme efficiency was less than 50% up to 2007 and since then has been hovering between 50% and 60%. Efficiency for the accident year ending 2014 is projected to be above 60%.

Claims experience and hence efficiency varies across years, as a result efficiency should be assessed on a longer term basis. Projected average efficiency for the latest five accident years is 59%.

There is considerable uncertainty in the results for recent years because a significant portion of claims cost is unpaid and based on actuarial estimates. Actual claim payments may emerge either higher or lower than the actuarial estimates. Historical movements in estimated claims and the impact on profit for a particular accident or underwriting year are shown in section 5.

6.3.2 Efficiency results by claim size band

The following table shows efficiency results by claim size band. Providing the split by size band illustrates the relative efficiency of small and large claims. These results are based on finalised claims from accident years 2000 to 2014. ANFs are excluded.

Claim size band	Before adjustment for contracted-out legal costs
<\$50k	46%
\$50k - \$100k	46%
\$100k - \$200k	48%
\$200k - \$500k	51%
\$500k - \$700k	53%
\$700k - \$1m	53%
> \$1m	52%

Table 16: Scheme efficiency results by claim size band

Efficiency hovers around 50% across all claim size bands. Smaller claims tend to have lower efficiency, due to a higher average proportion of legal and investigation costs.

6.3.3 Efficiency results by legal representation

The following table shows the efficiency results by claim size band and legal representation. Results are again based on finalised claims from accident years 2000 to 2014, and ANFs are excluded.

Claim size band	With legal representation*	Without legal representation
<\$50k	41%	57%
\$50k - \$100k	45%	58%
\$100k - \$200k	47%	58%
\$200k - \$500k	51%	58%
\$500k - \$700k	53%	59%
\$700k - \$1m	53%	57%
> \$1m	52%	58%

Table 17: Scheme efficiency results by legal representation

*before adjustment for contracted out legal costs

As expected, legally represented claims consistently have lower efficiency than non-legally represented claims. Non-legally represented claims have approximately 58% efficiency across all claim sizes, while efficiency for legally represented claims range from 41% (<\$50k) to 52% (>\$1m).

6.3.3.1 Other legal representation results

The following table provides further analysis of legal and investigation costs by legal representation. Results are again based on finalised claims from accident years 2000 to 2014, and ANFs are excluded. Workers compensation recovery claims are included. Based on the below table, even though legally represented claims form just above 60% of total claim numbers, they account for over 95% of total claims costs within the Scheme. Claims above \$50k are highly likely to be legally represented. Claims below \$50k have roughly equal chance of being legally and non-legally represented.

	Claim nu	ımber mix	Claim cost mix			
Claim size band	Legally represented claims*	Not Legally represented claims	Legally represented claims*	Not Legally represented claims		
<\$50K	45%	55%	70%	30%		
\$50k - \$100K	92%	8%	92%	8%		
\$100k - \$200k	95%	5%	95%	5%		
\$200k to \$500k	97%	3%	98%	2%		
\$500k to \$700k	98%	2%	98%	2%		
\$700k to \$1M	98%	2%	98%	2%		
> \$1M	99%	1%	99%	1%		
Total	62%	38%	96%	4%		

Table 18: Mix of legally represented and non-legally represented claims

*before adjustment for contracted out legal costs

The following figure shows the proportion of claims cost allocated to legal and investigation cost, by claim size bands and legal representation.

For non-legally represented claims, legal and investigation costs form less than 10% of overall claim cost. The proportion is relatively uniform across all claim size bands.

For legally represented claims, legal and investigation costs form a higher proportion of overall claim cost. This proportion hovers around 15% for claims above \$200k, and increases to 35% for claims below \$50k.



Figure 36: Legal and investigation costs by claim size

The L and NL columns in the figure represent legally represented claims and non-legally represented claims respectively

The following table show the mix between plaintiff and defendant legal costs, by claim size band. The mix is approximately 60%/40% (plaintiff/defendant) across all claim size bands. There is weak evidence that the proportion of defendant legal costs is higher for larger claim sizes.

Table 19: Mix of plaintiff and defendant legal costs

Before contracted-out legal costs

Claim size band	Plaintiff %	Defendant %
		D of official and the
<\$50K	59%	41%
\$50k - \$100K	60%	40%
\$100k - \$200k	59%	41%
\$200k to \$500k	59%	41%
\$500k to \$700k	58%	42%
\$700k to \$1M	57%	43%
> \$1M	56%	44%
Overall	58%	42%
	1	

7. Premium system analyses

In this section we:

- Analyse the geographic source of the increase in full claims (i.e. excluding ANFs) excluding workers compensation recovery claims from 2008 to 2014 for the five SIRA regions and within the Sydney metropolitan regions. The experience of workers compensation recovery claims are distorted by the changes to the workers compensation legislation in relation of journey claims in 2012. We also relate the changes in claims number by geographic location to the increase in the number of registered vehicles. This analysis considers the extent to which cross subsidies have changed
- Analyse claims experience by age of vehicle and age of driver to assess the extent of cross subsidies in the Scheme
- Review the average bonus-malus applied by insurers to vehicle classes to understand the extent to which their application impacts cross-subsidies in the Scheme.

As mentioned in section 2.1, one of SIRA's key objectives is to maintain affordability in the Scheme. A subsidiary indicator of Scheme performance considered by the SIRA is the equity of premiums paid by vehicle owners. That is subject to the objective for premiums to be affordable and reflect the underlying claims experience of the relevant cohort of policies. To achieve the objective of affordable premiums the SIRA limits the extent to which insurers can vary premiums by applying loadings and discounts (i.e. the bonus-malus structure tool). Applying constraints on insurer's ability to apply loadings and discounts to premiums introduces cross-subsidies between different cohorts of policies. The extent of cross -subsidies is a measure of the extent to which premiums are not equitable

The bonus-malus structure constrains the ability the insurers have to set premiums for individual policies by:

- Specifying what risk factors the insurers cannot use in their rating structure (e.g. geographic location such as postcode)
- Specifying the overall range of loadings and discounts the insurers can apply at an individual policy level. Currently the maximum bonus or discount is 15% except for divers over 55 where it is 25% and the maximum malus or loading varies by insurer and currently (i.e. April 2015) is of the order of 40%.

To the extent insurers are able to fully risk rate individual policies within the constraints of the bonusmalus structure determines the extent of cross subsidies within the Scheme. Examples of the types of risk factors where there are significant cross-subsidies within the Scheme include geographic location, age of driver and age of vehicle.

7.1 Source of increase in full claim numbers by geographical area

In this report, we have examined claim number trends by geographical region. We have not set out the differences in average claims size as there is little difference in claims size trends over time as illustrated in section 4.

We have examined the trends by both the SIRA's rating regions and, for the Metropolitan region, by Statistical Subdivisions (SSDs) used in the Australian Bureau of Statistics (ABS) census. SSDs are designed by ABS to each capture approximately similar number of persons in the Metropolitan region when performing census data collection.

In our analysis, we have examined trends in the number of full claims (excluding ANFs) reported excluding workers compensation recovery claims and related the increase to the increase in the

number of registered vehicles over the same period. For this analysis we have only included Class 1 vehicles.

Table 20 shows the proportional increase in registered Class 1 in the Scheme by SIRA's rating region from 2008 to 2014. The overall increase is around 11%, with slight deviations observed for each of the five regions.

Region	Proportional increase in number of Class 1 vehicles, 2008 to 2014*			
Metropolitan	11%			
Outer Metro.	15%			
Newcastle	13%			
Wollongong	14%			
Country	10%			
All Regions	11%			

Table 20: Proportional increase in the number of registered Class 1 vehicles from 2008 to 2014 by region

*Source: RMS

Table 21 shows the number of reported claims by SIRA's rating regions for Class 1 vehicles only. We have allocated full claims, excluding workers compensation recovery claims, to each region using the garage postcode of the vehicle most at fault. We have only set out details for these types of claims as they make up over 95% of the cost of claims in the Scheme.

Region	Claims reported in year ending 30 June							Overall increase	
	2008	2009	2010	2011	2012	2013	2014*	Number	Percentage
Metropolitan	3,616	3,673	3,903	3,967	4,339	4,925	5,020	1,404	39%
Outer Metro.	95	106	124	115	132	112	118	23	24%
Newcastle	588	592	547	598	584	589	446	-142	-24%
Wollongong	152	113	138	150	134	167	142	-10	-7%
Country	1,035	1,021	1,047	1,135	1,139	1,067	949	-86	-8%
Other/Nomdef.	49	56	99	71	83	84	83	34	69%
All Claims	5,535	5,561	5,858	6,036	6,411	6,944	6,758	1223	22%

Table 21: Reported full claim numbers by SIRA rating region

*Figures do not allow for ANFs which may be converted to full claims at a later stage, hence the decrease compared to 2013.

The increase in reported claims can be attributed to the sharp increase in the Metropolitan region, an increase of around 40% over six years. The increase in number of Class 1 vehicles over the same period is 11% for the metropolitan region. Note that the number of full claims reported in 2014 shown above is lower than 2013 as some claims initially notified as an ANF may convert to a full claims at a later stage.

Outside the Sydney and outer metropolitan regions there has been no obvious trend in claim numbers reported for Class 1 vehicles. This increasing trend in claim numbers observed for the Sydney metropolitan region explains why CTP premium rates have increased more in recent years in this region and if the trend continues into the future premium rates in the Sydney metropolitan area will increase more than in other regions of NSW. During this period, the number of vehicles has increased by 10% to 14% for these regions. This has contributed in the recent increases in the Class 1 premiums for the Sydney Metropolitan region relative to the other regions.

As discussed in section 4, the increase in claim numbers in the Scheme has primarily been caused by sharp increases in claims for minor severity injuries with legal representation (and moderate severity injuries to a smaller extent). Table 22 shows the number of reported minor severity injuries with legal representation claims by SIRA's rating regions for Class 1 vehicles.

Region	Claims reported in year ending 30 June						Overall increase		
litegion	2008	2009	2010	2011	2012	2013	2014*	Number	Percentage
Metropolitan	1,572	1,675	1,955	1,926	2,321	2,783	3,528	1,956	124%
Outer Metro.	40	41	50	48	60	53	84	44	110%
Newcastle	235	221	228	232	237	266	213	-22	-9%
Wollongong	58	42	76	72	67	84	83	25	43%
Country	421	424	467	452	507	472	550	129	31%
Other/Nomdef.	17	30	33	34	34	35	48	31	182%
All Claims	2,343	2,433	2,809	2,764	3,226	3,693	4,506	2163	92%

Table 22: Reported minor severity injuries with legal representation claim numbers by SIRA rating region

*Figures do not allow for ANFs which may be converted to full claims at a later stage, hence the decrease compared to 2013.

Over the last six years, the number of minor injury severities with legal representation on a reported basis has increased by more than 120% for the Metropolitan region; which accounts for most of the observed increase in this claim category for the Scheme.

7.2 Vehicle age claims experience

The analysis of relative claims cost by vehicle age shown in this section "one-way" analysis, that is, we have assumed there is no bias on the claims experience from the other rating factors. In reality, rating factors are correlated (e.g., younger drivers may on average drive older vehicles) and forming conclusions based on a series of one-way analyses may be misleading.

Figure 37 shows the relative claims cost by vehicle age for the different vehicle classes, Class 1 (i.e. motor cars), Class 3c (light trucks) and all other classes combined.

For Class 1 motor cars, the relative claims cost is lower than 1.0 for vehicles less than 10 years of age, and more than 1.0 for vehicles more than 10 years of age. A relative cost lower than 1.0 means the observed claims cost for this segment of the portfolio is lower than the average claims cost for this class of vehicles; similarly, a relative cost higher than 1.0 means the observed claims cost is higher than the average for this class of vehicles. In particular, the relative costs for vehicles up to 5 years of age averages around 0.8 and there is no clear trend within this range. It is of interest to note the relative cost for Class 1 vehicles less than 5 years of age is lower than the maximum bonus level of 0.85 for drivers under 55 years of age. The relative costs increases for vehicles between 6 and 10 years of age (0.97) and increases again for vehicles between 11 and 15 years of age (1.28) before falling for vehicles more than 16 years of age (1.09). As mentioned earlier, this analysis does not account for the impacts of other risk factors.

The above observations suggest that on average newer Class 1 vehicles cross-subsidise older class 1 vehicles as the maximum bonus for drivers under 55 is limited to 15%. With the current average maximum malus or loading of about 40% insurers are able to on average apply a premium consistent with older vehicles claims experience.

For Class 3c, Goods vehicles <4.5T GVM, the pattern is interesting. The relative cost for the very new vehicles are low (0.91) before increasing sharply to 1.28 for 2 year old vehicles. The relative cost then reduces gradually to vehicles between 4 and 5 years of age and then flattens before falling further for the really old vehicles (16+ years). These results suggest insurers on average are able to apply a premium consistent with class 3c age of vehicles difference in claims experience as the experience falls with the current max bonus-malus range.

For the other vehicles, the relative costs start high for newer vehicles and falls progressively for older cohorts of vehicles.



Figure 37: Relative cost by vehicle age band and vehicle class

7.3 Driver age claims experience

The analysis of relative claims cost by driver age shown in this section "one-way" analysis, that is, we have assumed there is no bias on the claims experience from the other rating factors. In reality, rating factors are correlated (e.g., younger drivers may on average drive older vehicles) and forming conclusions based on a series of one-way analyses may be misleading.

Figure 38 shows the relative claims cost by driver age for the different vehicle classes, Class 1, Class 3c and motorcycles. We have excluded the other classes from analysis as driver age is typically not used for the premium rating of these vehicle classes. We have used the youngest driver age where available and the owner age if the youngest driver age is not available.



Figure 38: Relative cost by "youngest" driver age band and vehicle class

All three vehicle classes show a very similar pattern for the relative cost by driver age band – relative cost reduces with increasing driver age. The relative costs of young drivers (less than 30 years of age) are typically much higher than 1.0 and drivers in the 31 to 40 and 41 to 50 bands have relative costs around 1.0 (i.e. the average) The relative cost for drivers 61 and over are significant below 1.0.

Under 21 year old drivers of Class 1 and 3c vehicles have relative costs substantially higher than the industry average max-malus of about 0%, which suggests they are cross subsidised by vehicles driven by older drivers in the Scheme. Interestingly, young riders of motorcycles, although having higher relative costs, are on average below the max-malus threshold.

7.4 Average bonus-malus

In this report we have examined the average bonus-malus applied by insurers to vehicle classes defined in the Scheme. The SIRA prescribes a set of premium relativities by vehicle class and rating region based on observed claim experiences; the insurers adopt these relativities to set the "base" premiums for each vehicle class-region combination. However, from these base premiums, insurers are able to apply a discount (bonus) or loading (malus), within the constraints of the bonus-malus structure, at an individual policy level using various rating factors.

The heat map below shows average bonus-malus percentages by vehicle classes across the last five underwriting years. A white coloured cell represents an average bonus-malus loading of 0%. Loadings are represented by a red tinge and discounts are represented by a green tinge. Depths of the colour represent the magnitude of the loading or discount applied.

	Underwriting Years Ending 30 September								
Class	2010	2011	2012	2013	2014				
1 Motor Car	O%	0%	0%	0%	0%				
3c Goods Vehicle < 4.5T GVM	1%	1%	2%	4%	4%				
10 Motorcycles	13%	11%	11%	10%	8%				
3d Goods Vehicle 4.5-16.0T GVM	7%	6%	5%	2%	4%				
3e Goods Vehicle > 16.0T GVM	-5%	-5%	-6%	-8%	-7%				
5 Primary Producers	-5%	-6%	-5%	-6%	-5%				
6a Omnibus > 16 Passengers	1%	1%	1%	3%	4%				
6b Omnibus < 16 Passengers	26%	21%	23%	18%	18%				
6d Hospital and Charity Buses	24%	17%	16%	11%	11%				
6e Other Buses	10%	14%	10%	8%	11%				
7 Taxi-cab	-2%	O%	-4%	-10%	-1%				
8 Private Hire Car	2%	2%	1%	-2%	4%				
9 Drive-Yourself Vehicles	O%	6%	7%	2%	6%				
11 Police Vehicles	-18%	-24%	-21%	-25%	-25%				
12a Board of Fire Comm Vehicles	-19%	-17%	-11%	-13%	-12%				
12b Other Fire Fighting Vehicles	2%	2%	2%	0%	-2%				
13 Ambulance Vehicles	-13%	-12%	-11%	-14%	-15%				
14 Undertakers' Vehicles	17%	18%	18%	17%	17%				
15a Traders Plate	30%	22%	18%	15%	15%				
15c Tow Truck	6%	6%	8%	5%	8%				
17 Mobile Crane	5%	2%	2%	1%	1%				
18 Miscellanous Vehicles, etc	-5%	-5%	-5%	-7%	-6%				

Figure 39: Heat map - average bonus-malus by class and underwriting year

Class 1, 3c and 10 (combined) are the three main vehicle classes in the Scheme, representing over 95% of insured vehicles. For Class 1 (motor cars), the average bonus-malus has been very stable at around 0%; this is expected as Class 1 forms 75% of vehicles in the Scheme and the ability to offer this class of vehicles an overall discount or loading would be limited. The average bonus-malus for Class 3 (goods vehicles) seems to be moving between a 0% and 5% loading, with the latest peak observed in 2013 and gradually reducing in 2014. The average bonus-malus for Class 10 (motorcycles) has been reducing. It is around 8% as at September 2014.

For the other classes, those with material loadings applied include the motorcycles, buses (with the exception of 6a Omnibus > 16 passengers), undertakers' vehicles and traders plates.

Classes with material discounts applied include police vehicles, fire trucks and ambulances. We note these classes are in the state government fleet and may be distorted by fleet pricing arrangements.

Other classes with material discounts include large trucks (Class 3e) and primary producer vehicles (Class 5). The average bonus-malus for taxis (class 7) has been about 0% except for 2013 where it was a 10% discount.

For classes with material loadings and discounts, the magnitude of their loadings and discounts have either reduced or remained steady over the past five underwriting years.

From the analyses of average bonus-malus levels across the vehicle classes in the Scheme there seem to be some consistent year on year cross-subsidies by vehicle class from some classes (those with an average malus) to other classes (those with an average bonus). These cross-subsidies arise as a result of the bonus-malus applied by insurers. The main "winners" seem to be the emergency response vehicles (police, fire trucks and ambulances) and to a lesser extent large trucks (Class 3e) and primary producer vehicles (Class 5). The main "losers" seem to be the smaller bus classes, motorcycles, undertakers' vehicles and traders plates.

8. Uncertainty

There are several sources of uncertainty within this report.

8.1 Actuarial estimates

There is significant uncertainty associated with actuarial estimates. Estimates of future claims experience (claims numbers and payments) are always inherently uncertain because they depend on the outcome of future events which cannot be forecast precisely. Examples of claims experience that are particularly challenging to forecast include changes to social, economic and legal environments. This uncertainty is higher for more recent accident periods, which are more heavily reliant on actuarial projections. Therefore, actual claims experience may emerge at levels higher or lower than the actuarial estimates.

8.2 Scheme efficiency estimates

The uncertainty identified for the estimated Scheme efficiency results is:

- ► The claim payments component relies on actuarial estimates of future payments, particularly for recent underwriting years. Estimates of future claim payments are always inherently uncertain because they depend on the outcome of future events which cannot be forecast precisely, such as quantum of claims costs, expectations of claimants and their legal representatives, and amounts of court awards. Therefore, actual claims payments may emerge at levels higher or lower than the actuarial estimates.
- We have not made any adjustment in our analysis for the commencement of the LTCS scheme in 2006 or the changes in the dispute resolution mechanism in 2008.
- ► The efficiency of the LTCS scheme is excluded from the analysis as it is not managed by SIRA.

9. Reliances and limitations

In undertaking this review, reliance has been placed upon the data provided to us by the SIRA and Taylor Fry. With regards to the SIRA data we are specifically relying on the accuracy by which insurers have provided their data and classified appropriate payment types and injury severity coding and that this allocation has been accurate over time. We note that because claim payments are made as a lump sum to claimants the amounts that insurers allocate to a particular payment type doesn't necessarily reflect the eventual use of the money. For example, claimants may use more or less than the allocated amount of medical payments for medical services as per their needs.

We note that some results in this report will not directly reconcile against results in SIRA Annual Reports as they have been produced on a different basis.

We have also made judgements and estimates where the information provided here was not part of the analysis conducted as part of the review. In general, reliance was placed on but not limited to the information provided. Except where indicated, the information has been used without independent verification. However, it was reviewed where possible for reasonableness and consistency.

We have performed the work assigned and have prepared this document in conformity with its intended utilisation by persons technically familiar with the areas addressed and for the stated purposes only. Judgements based on the data, methods and assumptions contained in the report document should be made only after studying the report in its entirety, as conclusions reached by a review of a section or sections on an isolated basis may be incorrect. EY staffs are available to explain or amplify any matter presented herein.

We have described certain limitations of our analysis throughout this report.

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